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STATE OF MONTANA

Department of Public
Instruction

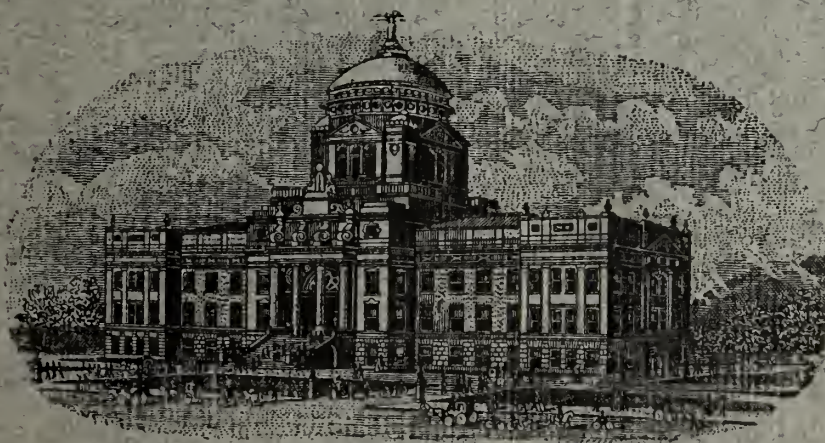
ARBOR DAY MANUAL

"The Groves Were God's First Temples"

State Flower:

The Bitter Root:

"*Lewisia Rediva*"



ARBOR DAY

MAY 10, 1910



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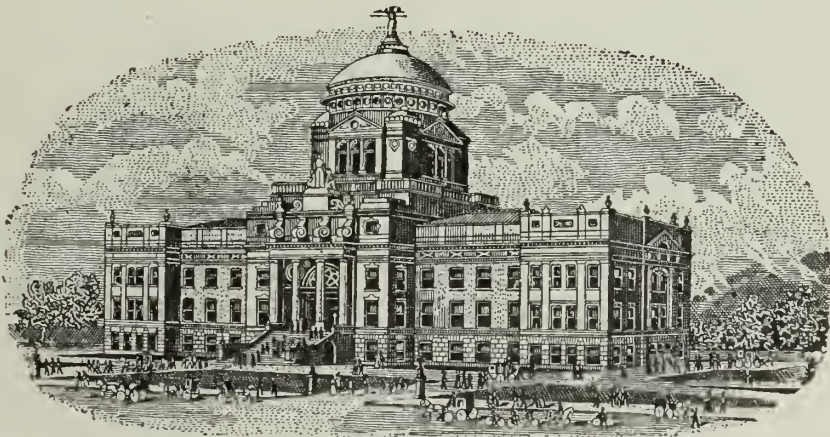
ARBOR DAY MANUAL

"The Groves Were God's First Temples"

State Flower:

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"*Lewisia Reclivata*"



ARBOR DAY

MAY 10, 1910



To avert treelessness; to improve the climatic conditions; for the sanitation and embellishment of home environments; for the love of the beautiful and useful combined in the music and majesty of a tree as fancy and truth unite in an epic poem, Arbor Day was created. It has grown with the vigor and beneficence of a grand truth, or a great tree.

J. STERLING MORTON.

ARBOR DAY MANUAL.

TO DISTRICT CLERKS AND TEACHERS:

You are hereby requested and urged to keep and preserve the annual numbers of the Arbor Day Manual as a part of the school library.

The material found in them has been selected and obtained from a large number and variety of sources with the object of providing a permanent collection of literature for the use of both teacher and pupil in the future in connection with the observance of Arbor Day.

The program herein outlined is suggestive only, and should be modified to meet the conditions existing in each school district.

W. E. HARMON,

Superintendent of Public Instruction.

Helena, Montana, April 4, 1910.

SPRING AND THE TREES.

Never yet was a springtime,
Late though lingered the snow,
That the sap stirred not at the whisper
Of the south wind sweet and low;
Never yet was a springtime
When the buds forgot to blow.

—MARGARET E. SANGSTER.

ARBOR DAY PROCLAMATION.

The creation of Arbor Day was an inspiration born of a love for the beautiful and appreciation of the useful. The planting of a tree or shrub is a tangible expression of an interest in things that go to make life happier and in every way better. The act may seem insignificant and yet it should not be said that an act beneficial to mankind and which inspires others to higher and nobler thoughts is unimportant.

That tree planting may be more fully appreciated and more extensively practiced, I, Edwin L. Norris, Governor of the State of Montana, do hereby designate and set apart Tuesday, the tenth day of May, nineteen hundred and ten, as Arbor Day.

Bearing in mind the purpose of the day, let all our people observe it in the spirit that prompted its creation, and in the schools let such exercises be held as shall indelibly impress upon the minds of the pupils the value of an act that benefits humanity and has for its purpose the enhancement of the beauty of our surroundings.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the State to be affixed.

Done at Helena, the Capital, this the twenty-second day of March, in the year of our Lord one thousand nine hundred and ten.

By the Governor:

EDWIN L. NORRIS.

A. N. YODER,
Secretary of State.

The Live Oak.

In contemplative attitude

The moss-draped oaks stand silent there—

Veiled sisters of the cloistered wood,

With reverent heads low-bowed in prayer;

And many a soft "Our Father" sighs,

And low "Hail Mary," sad and sweet,

As some faint wailing zephyr dies

Among the violets at their feet.

—Montgomery M. Folsom.

INTRODUCTION.

Arbor Day is intended to arouse and to develop in our school children a deep and lasting interest in tree-planting and forest culture. "The lesson of Arbor Day," says Pinchot, "is the use and value of the tree in the life of the Nation."

Tree planting and forest culture have long involved some of the greatest problems before the American people. These problems are closely associated with the very life and prosperity of the nation. The salvation of our forests, their growth, increase, welfare, protection, and preservation are all questions of the greatest vital interest to our people.

"For more than two centuries," said the late Hon. Sterling Morton, "the race, ax in hand, has advanced from the Atlantic sea-board westward, devastating forests with most unreasoning energy, always cutting them down and never replanting them. Hewing their way, through the eastern and middle sections, the pioneers destroyed without thought of their posterity millions upon millions of acres of primeval wood lands."

It was this constant cutting down of the forests by the settlers and their constant waste and destruction that prompted the poet to write:

"His echoing axe the settler swung,
Amid the sea-like solitude,
And rushing, thundering down were flung
The Titans of the wood."

"Cut, slash, waste, burn, destroy, anything to get rid of the trees," thus characterized the early settlers while wresting a coarse and scanty living from the soil and forests. Such in large part has been the history of our forests for full two hundred years. The natural and inevitable consequences followed:— Our great forest areas have for many decades been threatened with destruction, and our people as a matter of self-protection have been driven to study the science of forestry as practiced in European countries in order to apply it at home.

The science of forestry has long been known and studied in Europe. Its importance is just beginning to be appreciated in this country. Treadwell Cleveland, one of our experts in the Forest Service, once wrote in part as follows:— "A very few years ago, 'forest conservation' was little more than a phrase; today it is a vital issue in our national development. In connection with the general plan to conserve all natural resources

it is the most important and far-reaching economic policy ever adopted and pursued by any nation." "We might take forestry as a yardstick with which to measure the height of civilization. The nations which have followed forestry most widely and systematically are found to be the most enlightened." Thus measured and compared with the leading forest growing countries of Europe, the same writer is almost prompted to say of the United States, "Here is a backward nation."

This plain statement of a disagreeable fact hurts some. It humiliates more. It has, however, become deeply rooted in the minds of the American people. It has caused them to do much practical thinking. It is already working wonders. It has prompted our leading statesmen to look the ugly truth in the face and to adopt and enforce such active remedial legislation as will in the future go far toward a beginning to restore our forests to their former grandeur and wealth.

The outlook for the growth, protection, and welfare of our forests is brighter today than ever before. The chief reason for this is the fact that forest culture and forest preservation are taking possession of the common sense of Congress. Our country as a unit is now committed to the policy of preserving its forests and of enacting all needed laws for their growth and protection. Many of our states have reservations for the growth and protection of large forest areas. Many private individuals and corporations having large holdings of timber lands are here and there applying true forestry principles to them. Montana is fully aroused to the necessity of protecting and preserving her timber areas and has already appointed a state forester to act under the direction of the state board of land commissioners. Chapter 147, page 289, of the last session laws, becomes at this point interesting and instructive reading.

Our universities and higher educational institutions have long recognized the fact that Forestry is fast becoming one of the most useful and practical professions in this country and they are even now to some extent shaping their courses of study to meet that end. Our State University has already adopted Forestry as a part of its regular course of study. Attached to this manual and made a part hereof is a copy of Bulletin No. 63 just received from the University of Montana. We hope its contents will be read and discussed by young and old alike, by pupils, parents and teachers in every school district in Mon-

tana. Simple lessons in tree culture and forest botany are an essential part of every child's education. How trees grow, what kinds of trees are best suited to our different Montana soils, how to plant them, to cultivate them, and to care for them, are all simple, practical subjects and might with profit be taught to our older children in the grades.

The purpose of this publication is to give information to the children of our public schools and to their parents, relating to tree planting and the protection and preservation of our forests. Forest growth and culture are among the most important questions affecting the present and future destinies of our people. For the information herein contained we are much indebted to educators in all parts of the country, and in particular to the Forest Service of the United States, and we have herein freely used their ideas for the benefit of our school children in the belief that their opinions ought to be scattered broadcast among the people and the children to develop among them an active interest in tree planting and forest culture.

The monarch oak, the patriarch of the trees,
Shoots rising up, and spreads by slow degrees;
Three centuries he grows, and three he stays
Supreme in state, and in three more decays.

—DRYDEN.

Our Flag.

O'er the school-house, floating high,
We see our flag as we pass by.

It has thirteen stripes and seven are red,
And six are white as the snow instead.

With a little piece of star-filled sky
Set in the corner to gladden the eye.

You may search and search the whole world through,
There is naught so dear as its red, white and blue.

—Selected.

SCHOOL TRUSTEES, SUPERINTENDENTS, TEACHERS, AND CITIZENS OF MONTANA.

Daily we read in current periodicals of plans of conservation of the nation's natural resources. A convention composed of the governors of the states has discussed the question in all its phases. How to protect the mineral lands, water power sites, timber lands, and coal lands against frauds has been in the public mind for several years. It is the policy of the nation and states to protect all these interests that the people of the several commonwealths may not in the coming years suffer want. The conservation problem is not one of politics, it is one of statesmanship.

President Roosevelt called attention to the need of conservation, President Taft is interested in it, cabinet officials are making a study of it and congress is not unmindful of the seriousness of the problem.

Colleges have established courses in forestry for the preparation of young men who shall know how to preserve the great forests that belong to the national government.

Millions upon millions of feet of timber in days gone by have been ruthlessly destroyed. It now becomes a question of protection against waste and destruction, and one of rehabilitation. But while the forests have been partially destroyed there has been going on in nearly every state in the union tree planting for ornamentation, protection, and commercial purposes. The great states of the plains that were bare of trees in their natural condition to-day contain trees in almost countless numbers.

Municipalities have laid out beautiful parks and adorned them with trees and shrubs. They have also beautified the streets with parkings dotted here and there with trees and shrubs and flowers. One city alone has planted fully 10,000 trees and shrubs. The credit in this case is due almost wholly to the spirit in the public school which demands the most sightly school grounds and surroundings. In cities and villages in Montana school officials pretty generally have attempted to beautify their school grounds.

Some of the attempts have been only half hearted, for after the trees had been planted sufficient care was not given them.

It is nearly an impossibility to raise trees and shrubs in Montana unless in the earlier years of the growth of the tree

abundance of water is supplied. Many school grounds to-day show that one half of the trees and shrubs are dead and present to the traveler a testimonial of neglect.

The Rocky Mountain Husbandman has an article to the point and is as follows:

"We have written many columns in regard to planting trees for use and ornament, but we are not of the class that recommend orcharding in any part of Montana without irrigation, although trees do grow and bear fruit. Good results have been obtained in the region west of the mountains, but it is love's labor lost to try to grow trees or shrubs for ornament or use anywhere east of the mountains without artificial watering, for it can not be done. Anyhow, it never has been done and many attempts have been made. We love growing trees, but in order to shade our dry farming homes it will be necessary for our friends to draw water from the well or haul it from the creek to keep them alive through July and August. We find the buffalo berry bush trying to grow upon the dry land, but it kills back, although it sometimes manages to survive, but it is not a growth that you would be proud of, since it requires entirely too much time for the bush to make a tree. It will take fifty years at least, so we could not attempt to grow trees on our western prairies without we could get water from some source."

Some school grounds in different counties of the state testify eloquently to the thought and progressiveness of school officials, patrons, teachers and pupils.

Many Montana cities, young as they are comparatively speaking, have beautiful rows of shade trees along the driveways and contain many homes made beautiful by trees and shrubs and flowers. The valleys here and there show the progressive up-to-date farmer, with his home protected by a windbrake and beautified with trees and shrubs.

Montana is entering upon a new era of life. More is being written and printed to-day in Montana's behalf than any period before in her history. Improvement and growth is the watchword. It is not for the schools alone to beautify and adorn, but it is the duty of the citizens of every city, village, hamlet, and country to choose, and plant and water and prune with the utmost care so that in the not distant future each county, each city, and each community of Montana may be a living testimon-

ial of civic thrift and righteousness, for as Henry Van Dyke says:

“He that planteth a tree is a servant of God,
He provideth a kindness for many generations,
And faces that he hath not seen shall bless him.”

Cordially yours,

W. E. HARMON,

Superintendent of Public Instruction.

Helena, Montana, March 29, 1910.

Dear Girls and Boys of Montana:

There is no day of the year 1910 that should give you more pleasure than May 10th, Arbor Day. It is doubtful if any of you have experienced a colder winter than the one just passed. Abundance of snow for months has made it possible for sleigh-rides and coasting, and each has, I am sure, been enjoyed by you all. An unusually early spring has brought an end to winter's cold and sports. The snow birds have left for more congenial climes and the robin and meadow lark are most acceptably filling their places. Tree tops and meadows are made merry with these feathered songsters and ere long the newly built nest will be filled first with the little speckled eggs and later these will give way to the little fledgling that must wait for size and strength to leave its nest in order that it may finally enjoy to the fullest extent all the beauties of Mother Nature. All nature is springing into life, the trees are putting forth their foliage, and the fragrance of apple blossoms is detected in the sweetly scented air. The farmer is plowing and harrowing and sowing with visions of the green growing field, the golden harvest, and the well filled granary. The housewife has planned for a more beautiful flower garden and selects with the greatest care the most exquisite of colors, expecting as a result of her care that no more attractive garden has ever been her lot to possess.

The orchardist selects and plants and prunes and cultivates and waters confident that in the coming years the harvest will be abundant thus bringing gain to himself and thereby making himself a benefactor of the state.

Girls and boys: Look around you. Are the trees and shrubs planted by you in the years gone by beautiful to behold or were they neglected and do they now present to you evidence of want of care?

This year plant with more care if possible and tend with unceasing watchfulness. Make Arbor Day one never to be forgotten, because of your thought and care.

In after years you can then look back on duties well performed and feel satisfied that your community, your country, your state, and the nation is better for your having lived.

W. E. HARMON,

Supt. of Public Instruction.

Helena, Mont., March 29, 1910.

THE LOSS OF FORESTS, ONE OF THE GREATEST OF NATIONAL CALAMITIES.

History tells us that for centuries and even for ages the black flag of calamity has constantly floated over countries cursed with the loss of their forests, and that the destruction is constantly sweeping over all lands deprived of their forest vegetation and bringing in its train death to prosperity, paralysis to enterprise, loss of power and patriotism to the people.

This sweeping statement is in part explained by a few warning lessons from history reprinted from the last Arbor Day Manual.

Palestine.

"Old Canaan," in the time of Joshua, was a "land flowing with milk and honey." "It was a country," says Rothe, "of wonderful fertility and blessed with a delightful climate. The mountains of Lebanon were then densely covered with forests. Its large and constantly increasing population enjoyed comfort and abundance during centuries. It was the "promised land" of Scripture. But the gradual devastation and loss of her forests brought about a gradual deterioration of the country. Nowhere in the world is the contrast between the same country and the same region once blessed with abundance of forests and now deprived of them, more marked and more deplorable.

The hills of Galilee, formerly rich pasturing grounds for large herds of cattle, are now only sterile knobs. The Jordan has for ages been an insignificant stream and the once beautiful rivers of Palestine are now only small and stony runs, being completely dry during a great part of the year. The few cedar trees still remaining on the barren and rocky steeps of Lebanon look mournfully down upon a country now arid and desolate and fit

to sustain less than a sixth part of the population it contained in the days of Solomon. The cause of all this marked and woful contrast was the destruction of its forests."

Spain.

In the times of the Moors the Iberian peninsula yielded grain and fruits of every known variety, quality and in endless abundance, and was thickly populated by a highly intelligent people. Then the mountain slopes and valleys were covered with a dense and luxuriant growth of timber, which was in later years destroyed and cut down under the rule of the kings. Results: Now nearly all the plateau lands of Spain, being a third of its entire area, are desert-like and unfit for agriculture because of the scarcity of moisture. Her once fine climate has become changeable and rough. The average depth of her rivers has greatly diminished. It will require a full century of time and necessitate an immense outlay of money to restore Spain with a sufficient growth of timber. The evils of forest destruction are perhaps nowhere more signally illustrated than in Spain. One writer, Rentzsh, goes so far as to ascribe the political decadence of Spain in part to the destruction and loss of her forests."—Rothe and Encyclopedia Britannica.

Sicily.

"Look at Sicily, once the great grain reservoir for Rome. Since this island of plenty was despoiled of its forests, it gradually lost its fertility and mildness of climate. The ruins of the proud and opulent Syracuse are now lying in a desert covered with sand which the hot Sirocco carried over the Mediterranean from Africa. A few isolated and carefully cultivated districts of small area are all that is now left to remind the tourist of the by-gone glory of Sicily."—Rothe.

China.

China holds a unique position as the only civilized country which has persistently destroyed its forests. What forestry has done in other countries stands out in bold relief against the background of China, whose hills have been largely stripped clean of all vegetation and whose soil is almost completely at the mercy of the floods. Trees have been left standing only where they could not be reached. Almost the sole use for lumber is the manufacture of coffins.

Nowhere in the world is the forest cleaned off down to the

very soil as it is in China. When the forests are gone the saplings, the shrubs, and even the herbage, are taken. Slender poles are used to build houses; inconsiderable shrubs are turned into charcoal. Large areas of northern China have been rendered uninhabitable in consequence of deforestation, the hills being reduced to rocky skeletons and the valleys being filled with coarse sand and gravel. Throughout Northern China the floods which have caused the Yellow river to receive the name of "The Grief of China," are an immediate result of the deforested condition of the hills and the consequent rapid run-off of the spring and summer rains.—Willis.

In the lower mountains of northeastern China, where the stripping process has reached its extreme phase, there is no trace of anything worthy the name of forest. In a word, the Chinese, by forest waste, have brought upon themselves two costly calamities, floods and water famine. The forest school just opened in Mukden is the first step in the direction of repairing this waste so far as it may be repaired.—See Forest Circular No. 140.

These illustrations are the result of centuries of observation, and history. They teach us of the past. They warn us of the future. They make plain to us the forestry facts, that the laws of nature must be obeyed, or that dire consequences will follow. They inform us that forests and rainfall are linked together to enhance the climate, the fertility and the crop producing capacity of any country. Destroy the forests and the benefits of the rainfall are largely lost, the climate changes, the crops fail, the land becomes parched, thirsty, arid, and often a desert, becoming each year less and less valuable. These are some of the warning examples of history so often noticed in Europe, Asia and in the isles of the sea, and are now beginning to be noticed in America.

These warning examples have thus far had a wholesome effect upon our people; they have compelled Congress to reflect upon the dreaded consequences of a forest famine in the future and to take the first active steps to prevent it. Our statisticians have studied the question of timber consumption and they have disclosed some startling facts.

They found that our timber consumption ten years ago amounted to 350 cubic feet per capita as against 12 to 14 cubic

feet per capita in Great Britain and 40 cubic feet per capita in Germany. They further found that the best estimates then made the actual consumption of our forests for fuel and lumber chiefly, twenty-five billion cubic feet, and to furnish this amount would require the produce of an annual growth of one billion two hundred million acres of woodland, whereas our total forest area is less than five hundred million acres. It will therefore be noticed that more than half of our annual consumption was a draft by so much upon our forest capital, when we should have been drawing from the forests only the amount of their annual growth or the interest on the capital.—Egleston.

We are naturally led to ask how long, at this rate of consumption, will it be before our timber supplies will become exhausted? How then to rehabilitate our forest areas, and to cultivate new forest areas, to till them, to care for them as thoroughly and systematically as the farmer now cares for his corn or hay crop, to wait at least two full generations or even longer in order to reap the first fruits of such labor, are now questions for consideration by our state and national governments; questions, in fact, forced upon us by the constant destruction of our forest wealth during the past fifty years.

A MOURNFUL CONTRAST.

The solitary stillness of the wood,
The long deep silence of the morning calm,
The melody that nature understood
When all the world lay cradled in His arm;
The solemn incense of the fragrant pine,
The half heard music of the hidden choir,
The rythm of the chant almost devine,
Sung underneath the starry altar fire—
Has ended in the sullen sounding blows
Of crashing steel along the wooded aisle,
In blackened stumps above the winter snows,
In land that has forgotten how to smile;
A desert where the north wind sighing sweeps
Above the tomb in which the forest sleeps.

—HAROLD TROWBRIDGE PULSIFER.

From the Outlook of April 6, 1907.

THE FOREST LESSON.

"In order to reforest a part of the Adirondacks, it has been found necessary to import a million young trees from Germany."—Press Dispatch.

The throb of the ax in the forest went on through a nation vast,
Like a fevered heart that is beating in a measure that's all too fast;
We gave carte blanche to the woodman, and none stayed the vandal hand.
And now, to replant our forests, we must send to the fatherland.

The sawmill shrieked in the mountains, and the sound was borne on the breeze,
O'er the crash of the falling giants as they splintered the smaller trees,
And all that was left was silence, where whispered the forest grand—
And now, to repair the mischief, we must send to the Fatherland.

We have gained some industrial captains—of lumber monarchs a few—
But somehow they don't quite balance the damage that such chaps do;
There's naught to make up for those barrens where wantonness set its brand,

In these days when our forest seedlings we must send to the Fatherland.

—ARTHUR CHAPMAN, in *Denver Republican*.

FORESTRY, A NEW SCIENCE.

Twenty years ago Forestry was little known and scarcely thought of as a science. Today it is the latest science to be introduced and taught in our universities. It is perhaps safe to say that three-fourths of the American people are strangers to Forestry. "As a science," says the Hon. Gifford Pinchot, "Forestry secures the exact knowledge of forest life, which makes it possible to co-operate with nature in bringing the forest to its very fullest usefulness as a source of wood, as a protection to the soil, or as a natural reservoir. As an art Forestry applies this knowledge to the good of mankind."

Our people are now realizing, as did the Germans and other European nations a full century ago, that tree planting and forest culture are closely associated with the very life and prosperity of the nation, and that the preservation, protection and increase of our forests are all questions of the greatest vital interest to their welfare and to that of their posterity.

Never before has a new science been presented to our people under more favorable auspices. The time for it is ripe, the call for it is urgent, the necessity for it great and nation wide, the demand for it constant, pressing, continuous. The question for years has everywhere been raised:— Why and how have we lost our forests, once the wonder, admiration and envy of civilization? But now that they are largely lost, ruined or destroyed,

is there no way of recovering them? How long will it take to plant new forests? How long must we wait for them to grow? What is essential to promote their growth and welfare? If we cannot raise forest trees to their former size and usefulness during our life time, let us raise them for our children's benefit, and use, and if not for our children, then for posterity. In any event, let us take hold of this problem and solve it. Our children have claims upon us, their children will have claims upon them, posterity will have claims upon us all, and as true American citizens, loyal to our country and to future generations, we cannot avoid these claims nor can we act well our part in life without studying carefully and thoroughly the demands of the future upon us. Herein we notice the commercial and patriotic features of this question and herein lies the germ, root, and foundation principle of tree planting and tree culture. This is the animating spirit of Forestry. This is why the American people are rapidly waking up to the necessity and importance of Forestry; this is why Congress has been so active in recent years in all forestry matters; and this is why some of our state legislatures are also becoming active in tree planting and forest culture.

As a nation cultivating our forests on a scientific plan we appear to be backward. We are, however, proceeding possibly slowly yet with an eye singled more for safe and sure results than for rapidity of movement. Our people have always known that to preserve their bank deposits they should expend each year an amount never greater than the interest accruing upon them, and they are now slowly learning that the best way to preserve their wealth in forests is to take from them each year for timber and for fuel a quantity never greater than their annual growth and increase.

We believe that the time is coming, possibly within the life time of the girls and boys now in school, when the forest grower will plant and cultivate forest trees as the fruit grower now plants and cultivates his fruit trees. when acre after acre of ground will be carefully selected and prepared for the planting of forest trees and carefully cultivated, although these trees may not yield a return in lumber for the next fifty or one hundred years. This means that one generation will plant and cultivate a forest for the use and benefit of the next and following generations. This idea is, however, quite contrary to the

spirit of the present money making age. To make an investment now, the income of which cannot be realized during the life time of the investor, and probably not for the next fifty, seventy-five or one hundred years, is a thought rarely for a moment to be entertained by our people. To make provision for their children's grand children is a subject too remote for their consideration. To sow now and to reap now is their present all absorbing thought. But to sow now for others to reap a century hence is a thought usually scouted and ridiculed by all of our business men. Yet this very idea, as applied to the growth of forests, must be put into practical execution before we and those coming after us can hope to recover our former wealth in forests, and this is the very thought, idea, and principle practiced and enforced by the Germans for more than a century past.

Forestry is a new science in the United States. The care, protection and cultivation of forests are new industries in our country. They are new occupations requiring new kinds of skilled labor to engage in them.

Trained tree planters in Montana are few and hard to find. Forestry is a profession requiring a knowledge of many kinds of woodcraft in order to practice it with skill and success. The Forester must be specially trained in all branches relating to his duties:— Dendrology, Silviculture, Surveying, Lumbering, Measurements, Chemistry, Botany, Geology, Physics, etc. Thus we notice that the forester must have had a training and an experience equal to a profession in order to become an expert in his work.

Forestry does not aim to exclude the ax of the lumberman, but rather to guide the ax to the trees that are mature and ready for cutting, and to prevent the ruthless destruction of young trees and of whole sections of woodlands, whose continued life and growth mean the protection of the all important water supply. Forestry means that every section of woodland under the care and supervision of the state or national forestry service, will be cared for, protected and patrolled by our forest rangers almost precisely as our policemen and other guardians of the peace now regularly patrol our streets to see that all is well in the locality under their care.

THE PRESERVATION OF OUR FORESTS.

The conservation of our national resources President Roosevelt calls the "most mighty question now before the people of the United States."

At the invitation of the President the governors of all the states and territories and also a large number of men of national prominence, familiar from experience in business life with the four great classes of resources—the forests, waters, mines and soil—met at the White House in May, 1908, and there considered and discussed this question and before adjournment signed a declaration of principles, which has become a warning note to the entire country, to Congress, and to every state legislature, to conserve the foundations of our prosperity.

Prominent and perhaps first among our national resources are our forests. The needless waste and destruction going on among our forests in past decades have been sights to make "humanity weep." Miss Julia D. Cowles in the April, 1908, issue of *School Life*, writes of our forests in past decades as follows:

"Everywhere there was a demand for lumber, and as population increased the demand increased, and the forests fell as though their resources were indeed inexhaustible and their areas without limit. Lumbering was carried on in a reckless and extravagant fashion, and the fact that whole regions were stripped regardless of the consequent devastation of the land was given little consideration. The best of the trees were cut and the best only of each tree was marketed. Smaller trees were broken and young growths crushed out of existence by the reckless manner of felling and removing the logs, while the unused portions, such as stumps and branches, were left to invite the flames which so often followed. Thus the region which had been a place of beauty and fertility was left a desolate and almost irreclaimable waste."

"For years this wanton destruction of the forests went on, and it was not until very recent times that any number of the more thoughtful men of the country began to realize that unless strict measures were adopted we would soon become a nation without forests, that wood for the numberless uses to which it is needful that it should be put would be lacking, and that our streams, denuded of their natural forest covering,

would be alternately flooded and parched.”

“The subject was at first agitated only by a few who realized the condition toward which we, as a nation, were hastening. It was finally made apparent that in order to save a part of the forests, the National Government must interfere, and during the administration of President Cleveland the first national forest reserves were set apart. The late President McKinley followed the example of his predecessor and created other national reserves. President Roosevelt, realizing the gravity of the situation, has set aside other large forest areas, until at the present time there are one hundred and sixty million acres of forest under the protection of the National Government.”

“Some of the states, notably Pennsylvania, New York, Massachusetts, Connecticut, Indiana, Wisconsin, Michigan, Minnesota, and California, have State reservations for the protection of large or important forest areas, and individuals here and there are holding their lands and are applying true forestry principles to their administration.”

“In the minds of some people forestry means opposition to all lumbering and a sentimental saving of the trees at the expense of all utilities. This is an entirely mistaken conception. No man has done so much for the protection and preservation of our forests as Mr. Gifford Pinchot, formerly Chief Forester of the Agricultural Department at Washington, and no man is better able to make definite statements as to the true object of forestry. This is his statement: “The object of practical forestry is precisely to make the forest render its best service to man in such a way as to increase rather than to diminish its usefulness in the future. Forest management and conservative lumbering are other names for practical forestry. Under whatever name it may be known, practical forestry means both the use and the preservation of the forests.”

Forestry in the future will be a prominent part of our national policy. The “warning note” and this “declaration of principles” above referred to is the rallying cry to which our people are now responding with a loyalty and a zeal akin to patriotism. Briefly summed up it means that the future prosperity of our country depends upon the conservation of our national resources. Among the numerous statements relating to the work accomplished at this meeting at the White House the sentiment of

the entire assembly and the nation at large was probably best expressed by Dr. James B. Angell, President of the University of Michigan, when he said: "I think we may say that in the whole history of our country, there has never been an assemblage, since the one that was gathered to frame the Constitution of the United States, where such lofty interests were apparently considered with such a lofty patriotic spirit as seems to be manifested here today. I am sure that this will stand upon record as a great historic event, and that you, and your children, will all be proud that you have been able to participate in it."

OUR FOREST WEALTH, ONE OF OUR GREAT NATIONAL ASSETS.

Our Forest wealth constitutes one of our great national assets. It is one of the richest heritages ever handed down from one generation to its successor. Our people are beginning to comprehend the worth and value of this inheritance, since they have long been threatened with its loss. For two hundred years they have been in some degree spendthrifts;—prodigals in fact, wasting their forest substance in all kinds of excesses and riotous indulgences. But at last they have come to themselves. They now realize that a common peril in the loss of their forests has long been confronting them, and only recently, within the last few decades, have they waked up to realize its full danger.

Will the loss and destruction of forests, the ancient curse of Palestine, the fate of Sicily, the constant woe of China, and the recent curse of Spain, ever be the fate of our country? This and a multitude of other questions naturally suggest themselves to a people now thoroughly aroused to the dangers of a peril long threatening them.

In the cases of Palestine, Sicily, China and Spain, it seems that the loss and destruction of their forests were dreadful sins of omission and commission, and that the iniquity of the generations guilty of them has been constantly visited upon every generation succeeding them.

We believe there is resolution enough, caution and purpose enough, activity sufficient, foresight and intelligence sufficient among our people to guard against and to prevent all perils now threatening the destruction and loss of our remaining

forests. The attitude of congress, of our state legislatures, and of the people at large, the great forest reservations of our former presidents indorsed by the people everywhere, the recent conference of our governors and leading business men and statesmen at the White House in 1908 and the declaration of principles unanimously indorsed by them and elsewhere referred to, the influence of Arbor Day sentiment among our school children all over the land,—all tell us in forcible language that our people are now heart and soul thoroughly united and fully committed to the vigorous execution of the policy of conserving our national resources, and of our forest areas in particular.

The outlook for forestry and tree planting in the United States was never more promising, never brighter than at the present time. In fact our people and statesmen are now as fully aroused to the necessity of caring for our forests, of protecting them, preserving and increasing them for future use and consumption as they were in past years grossly thoughtless and guilty of neglecting them, of destroying them, of wasting them, and of letting them go to wreck and ruin. One thought and one purpose everywhere prevails:— The conservation of our national resources is now and will be one of the future policies of our government.

FORESTRY IN THE WEST.

To what extent our forest system is taking effect in the West and how it is managed best appears in the letter to this office from District Forester W. B. Greeley, Forest Service, District No. 1, Missoula, Montana, to whom we are indebted for the following instructive information:

“The entire West is divided into six districts, each in charge of a District Forester. District No. 1, with headquarters at Missoula, comprises 28 National Forests in Montana, North-eastern Washington, Northern Idaho, Northwestern South Dakota, Northern Michigan, Northern Minnesota, and South-western North Dakota.

District 2, with headquarters at Denver, includes the National Forests in Colorado, Wyoming, South Dakota, Nebraska and Western Kansas.

District 3, with headquarters at Albuquerque, New Mexico, includes the National Forests in Arizona, Arkansas, New Mex-

ico, Oklahoma, and two Forests recently created in Florida.

District 4, with headquarters at Ogden, includes the National Forests in Utah, Southern Idaho, Western Wyoming, Eastern Nevada, and Northwestern Arizona.

District 5, with headquarters at San Francisco, includes the National Forests of California and Southwestern Nevada.

District 6, with headquarters at Portland, includes the National Forests of Oregon, Washington and Alaska.

Each district office is divided into four departments, designated respectively as the offices of Operation, Silviculture, Grazing, and Products.

The office of Operation has charge of the disbursements and expenditures for the National Forests of the District, the maintenance of Supervisor's headquarters and the permanent improvement work in the Forest, such as building Rangers' cabins, roads and trails, telephone lines, etc., also the agricultural settlement work pertaining to the homesteading of agricultural land within National Forests under the Forest Homestead law.

The office of Silviculture has charge of all timber sales on the National Forests, of nurseries and planting operations and of silvical studies.

The office of Grazing supervises the grazing on the National Forests of each District. The range conditions are studied and the number of stock that can be grazed on each Forest is limited to the number that can be accommodated without overgrazing the range.

The office of Products conducts timber tests to determine the physical and mechanical properties of the different kinds of wood; it conducts experiments in wood preservation and makes studies of the amount and kinds of wood required in the different wood-using industries. Much of the work is carried on in collaboration with Universities or commercial companies as in the erecting and operating of tie-pickling plants in co-operation with railroads.

Each National Forest is in charge of a Forest Supervisor whose office is in a town or city situated either within or conveniently near his Forest. Under him is a field corps of Forest Rangers who patrol the Forest on the lookout for fires and timber trespassers, build roads, trails, bridges and other improvements and keep them in repair, see that the grazing privileges

are not abused, conduct small timber sales and attend to various other duties. Each National Forest is divided into districts and a Ranger is generally assigned to each district having his headquarters at a central point within his district. Technical assistants and expert lumbermen are assigned to Forests where they are needed to superintend large timber sales or special forestry work.

The timber sale policy of the Forest Service is to sell all mature timber that can be cut without impairing the productive capacity of the Forest. No trees may be cut except those that are marked by Forest officers and generally from one-third to one-half of the timber on a sale area is left standing—the trees left being the younger and most thrifty specimens which will seed up the ground and also yield a second cut in from 20 to 40 years. Marking timber so as to remove the trees which should be cut and leave the Forest in better condition than before cut is a silvicultural art and the marking is always done either by or under the direction of trained foresters.

Throughout the West there is an immense area of mountainous land on which the forest has been destroyed, mostly by fire. The area of denuded land within the National Forests of this District aggregate four million acres. On most of these areas the forest is not re-seeding naturally and can only be restored by planting. It is the aim of the Service to do this as rapidly as possible, and forest nurseries to grow the stock have been established on a number of National Forests. In this District a nursery has been established at Boulder, near Helena, which will have a capacity of 3,000,000 a year, and another at St. Regis in Western Montana with a yearly capacity of one and one-half millions.

The silvical or forest investigative work in each District consists in the preparing of volume and yield tables by which standing timber may be accurately estimated and the rate of growth and future yield of the forest determined. Special studies are also made of the life histories and characteristics of our principal timber trees, the results of which are embodied in such publications as "The Douglas Fir," and "Reproduction of Western Yellow Pine in the Southwest."

CARE GIVEN TO EUROPEAN FORESTS AND NET RESULTING PROFITS.

Forest botany, like the anatomy of the human body, is a science now studied and practiced in Europe to the end that all tree diseases may have their causes known and analyzed and the proper remedies applied to restore them to health.

Old and well known as are these tree diseases to European foresters, they are just now beginning to be studied and understood here. Schools of forestry have long been established in France, Spain, Denmark, Italy, Germany and Russia. In these national schools, particularly in Germany, forest trees are studied and cultivated with the same diligence, care and attention that is now given to fruit trees in this and other countries. Forest botany in these schools is a subject of special importance. All kinds of insects injurious to forest trees are noted and studied with special attention. In the German schools, says W. R. Phipps, an eminent authority, "tree insects are shown in the several stages of their existence—larvae, chrysalis, caterpillar, and moth—with their ramifications in the stem of the trees. In cases where the animal or insect does damage to trees, specimens of the branch, leaf or cone in a healthy condition, and in their condition after being attacked, are exhibited so that the students of forestry can see at a glance the nature of the damage and can connect it with the insect or animal causing it."

"In Germany the management of forests by the state has," according to Hon. John Eaton, former commissioner of the Bureau of Education, "been carried on for hundreds of years and vast tracts of sterile lands have been redeemed by government forestry. Here we find a model not only of systematically planting thousands of acres of trees, but a general system of forest management and careful experiments made to find out the rate of tree growth, and to find out the best kind of soil for each kind of tree. Experiments also have been made in every branch of forestry, resulting in hundreds of thousands of acres being worked to the best advantage, to promote forest growth, the annual yield of lumber being now and for many years to come known and calculated to within a few hundred cubic feet. In Prussia 10,000,000 acres of state forests growing on rocky lands and hillside slopes yield a net profit of 65 cents

per acre. The steepest and rockiest hillsides are all covered with forests created by the labors of the forest department. In Saxony the state forests of 400,000 acres yield a clear net profit of about \$3 per acre, and in Bavaria the forests yield a net income of \$1.50 per acre. In Hanover 600,000 acres of state lands yield a clear profit of \$1.40 annually from each acre. In the German national appropriation bill large sums are annually set apart for the purchase of such lands as are unfit for cultivation and for utilizing the same by planting trees.

From these interesting facts it appears that tree planting and forest culture in Germany have long been constant occupations and that every acre of ground is made to produce something of value to the people and government wherever it is possible.

Forest planting and forest cultivation are still in their infancy in this country. They are occupations which in Europe have required a full century to develop, to test, and to prove their worth and permanent importance and to secure substantial incomes annually from them. If the barren wastes and the steep rocky hillsides of central Europe have in the past produced and are now producing wood and timber at good profits per acre, then we believe it fair to presume that, when the same system and care are applied here equally as good or even better results will eventually be secured.

Nothing appeals to our people so strongly as the business end and financial results accruing from any business enterprise. When they once realize that our rocky hillsides and the steep waste places, now worthless for crops and good only for our cattle and sheep to graze upon during a small part of each year, can be made to produce by forest planting incomes per acre as great or even greater than those now produced in Europe from the same kind of soil and under similar climatic conditions, then we shall see forests springing up everywhere, on hillsides, on mountain slope and in valleys, carefully cultivated and protected for the crops of wood and lumber sure to grow upon them."

An Educator.

"In learning," proudly said the birch,
"I once played quite a part;
Whenever little boys were dull,
Why, I could make 'em smart."

—From St. Nicholas.

SOME FORESTRY FACTS.

The following facts are taken from "The Forests of the United States; Their Uses," the same being the title of Pamphlet Circular No. 171, issued December 11, 1909 by the Forest Service of the U. S. Department of Agriculture, and prepared by O. W. Price, Associate Forester, and R. S. Kellogg and W. T. Cox, Assistant Foresters.

What Forests Do.

Forests not only grow timber but they hold the soil and they conserve the streams by regulating their flow. Our knowledge of the effects of forests upon the quantity of water carried by the streams is not yet complete. We do not possess complete scientific proof that forests increase rain, but known laws governing rain fall and the known physical effects of forests lead straight to that conclusion. A part of the falling rain or snow is checked by the tree tops and returned to the air by evaporation. The forest soil gives up water to the air more slowly than either brush land, meadow land or cultivated fields.

The forest floor is a blanket and like a blanket it will hold more water than will the harder and relatively less porous soil of the open land. A forest soil when saturated will hold more than half its dry weight in water or over six inches of water for every foot of soil.

That forests hold soil and that hillsides denuded of their forests do not hold soil is to be seen in any mountain region of the United States. This is shown in the valleys of such rivers as the Ohio, Monongahela, Allegheny, Cumberland, Savannah and other rivers. One small stream has been found, by actual experiment, to deposit silt in one year equal to one and one-half tons per acre of its watershed. In the whole United States the loss of soil each year is from one to two thousand million tons.

What We Have.

Our forests now cover 550,000,000 acres or about one-fourth of the United States. The original forests covered not less than 850,000,000 acres. Forests publicly owned contain one-fifth of all timber now standing. Forests privately owned contain at least four-fifths of the standing timber. The timber privately owned is not only four times that publicly owned, but it is generally more valuable. Forestry is now practiced on 70 per cent. of the forests publicly owned and on less than 1 per cent. of the forests privately owned, or on about 18 per cent. of the total area of the forests. There were five great forest regions,

namely, the northern, the southern, the central, the Rocky Mountain, and the Pacific. The northern forest was the home of the white pine. With it grew red pine, spruce, tamarack, cedar, fir and several kinds of hard wood. In the southern forests the yellow pines were the most common trees, with hard woods on the better soils and cypress in the swamps. The Pacific forest was nearly all evergreen, chiefly the Douglas fir, western yellow pine, redwood, western red cedar, sugar pine, and several other firs, cedars and spruces.

As well as these great forest regions, the United States probably contained one hundred million acres, chiefly in the west, of scrubby forests and brush land of great value in conserving stream flow, and for fuel, posts and other small material.

Fire, careless cutting, and excessive grazing have greatly injured the composition and quality of existing forests.

Forests privately owned are in two classes—farmers' wood lots and larger private holdings. Wood lots consist in the main of scattered patches of original forests from which the best timber has been cut.

Corporate holdings with the larger individual holdings contain the most valuable timber in the United States.

What Is Produced.

The yearly growth of wood in our forests does not average more than 12 cubic feet per acre. Nearly all of our native commercial trees grow much faster than those of Europe. We already grow post timber in twenty to thirty years, mining timber in twenty-five to thirty-five years, railway tie timber in thirty-five to forty years, and saw timber in thirty to seventy-five years.

That our forests grow more slowly, although the individual trees of many kinds grow fast, is our fault. In Europe forests composed of trees growing much slower than many of ours, produce over four times as much because the forests are cared for.

We have twenty important kinds of trees which produce in 100 years or less, timber fit for the saw. Under present conditions, chestnut, cypress, redwood, yellow poplar, black oak, jack pine, red and white pine and yellow pine will grow post timber from four to eight inches in diameter in 15 to 30 years. We are already getting mine props in from 25 to 35 years from red or black oak and loblolly pine, from white oak in 45 years,

from red pine in 40 years, from lodgepole pine in 60 years, from yellow pine and Douglas fir in 50 years among the Rocky Mountains, and in 35 years on the Pacific coast.

The time now needed to grow a railway tie in our forest runs from 35 years for red gums to 150 years for white cedar and tamarack in the northern swamps. These figures are taken from actual measurements of trees grown in forests not conservatively managed.

What Is Used.

We take from our forests, including waste in logging and in manufacture, 20,000,000,000 cubic feet of wood. We use in a normal year 90,000,000 cords of fire wood, 40,000,000,000 board feet of lumber, 118,000,000 hewn ties, 1,500,000,000 barrel hoops, 3,000,000 cords of native pulp wood, 165,000,000 cubic feet of mine round timbers. Lumber and shingles are usually made from large timber of high quality. Our paper and pulp mills use over 3,000,000 cords of native wood each year and they import more than 900,000 cords from Canada.

What Is Wasted.

Forest fires burn over millions of acres and destroy billions of feet of timber annually. The young growth destroyed by fire is worth far more than the merchantable timber burned. One-fourth of the standing timber is left or lost in logging. The loss of timber in the mill is from one-third to two-thirds of the timber sawed. Great damage is done by insects to forests and forest products. The average of only 320 feet of lumber is used for each 1,000 feet which stood in the forest. Prodigious waste has always accompanied our use of the forests. The chief causes of waste are fire, bad methods in logging, waste in the mill and waste in the use of wood. Forest fires have destroyed many billion feet of commercial timber. The average waste of the woods is 1,000 board feet to every 4,000 board feet logged. This is due to a variety of causes, many of which could be wholly removed with both present and permanent profit, and all of which could be greatly reduced with the same result. Damage to the forest by fire is most noticeable and of course the largest kind of damage, but the damage resulting to standing forests and also to timber ready for the mill, must also be taken into consideration.

The great causes of waste, vast in their effects upon our for-

ests, are the general failure to realize that the cost of growing timber as well as logging and manufacture must be reckoned in its value.

Where We Stand.

We take from our forests each year three times their yearly growth. We take 36 cubic feet per acre for each 12 cubic feet grown. We take 230 cubic feet per capita while Germany takes 37 cubic feet per capita and France 25 cubic feet per capita.

By wasteful logging, fire, failure to provide for a second crop, we have made our forests less productive than any forests of similar area in the world, in spite of the remarkably quick growth of most of our timber trees. Our use of wood per capita is larger than that of any other nation. We use 230 cubic feet per capita, Canada, 200; Germany, 37; France, 25; and Great Britain, 14.

What Should Be Done.

First, we should stop forest fires. By careful logging we should both reduce waste and leave cut-over lands productive. We should plant those lands now treeless which will be most useful under forest. We should bear in mind that it costs much to grow timber as well as to log and saw it. We should continue by state and nation the preservation of forests now publicly owned.

Decay, fire, insects and salt water borers are the elements most destructive to timber. Of these decay is far the most destructive. It is also the easiest to retard. Preservative treatment of timber will lengthen by ten to twenty years the life of wood now commonly used for posts, poles, ties, mining timber, bridge timbers, and for much other construction material. A farmer can treat a fence post with creosote for about ten cents and make it last for twenty years. The loss to the value of the forest through injury to young growth in logging is larger than the waste of merchantable timber.

Where We Might Stand.

By reasonable thrift we can produce a constant timber supply beyond our present need, and with it conserve the usefulness of our streams for irrigation, water supply, navigation, and power.

Under right management our forests will yield over four times as much as now. We can reduce waste in the woods and in the mill at least one third, with present as well as future profit. Pre-

servative treatment will reduce by one-fifth the quantity of timber used in the water or in the ground. We can practically stop forest fires at a total yearly cost of one-fifth the value of the standing timber burned each year.

We shall suffer for timber to meet our needs until our forests have had time to grow again. But if we act vigorously and at once we shall escape permanent timber scarcity.

We take out of our forests each year three times as much wood as they grow, partly because we waste and misuse more wood than any other nation. Against an average yearly growth of 12 cubic feet per acre in the United States, the forests in Germany, all of which are rightly handled, yield each year 48 cubic feet per acre although their most common trees do not grow naturally as fast as ours.

Most other countries have already learned that they must take the greatest care of their forests in order to preserve them, to keep them in healthy growing condition and to render them fit for future use. We are among the last to learn that lesson. We can profit by that lesson if we will.

Forestry has been given root and being in the great body of American citizens. No country takes poorer care of its private forests than ours, and no nation has a more wholesome and enthusiastic public sentiment for the right use of the forest than our own.

ARBOR DAY DATES IN THE SEVERAL STATES AND TERRITORIES, AND LIST OF STATE FLOWERS SO FAR AS KNOWN.

The following table copied from the Boston Journal of Education is valuable as showing the growth of sentiment in favor of a State Arbor Day.

States and Territories.	When First Observed.	Date of Annual Observance.	State Flowers.
Alabama	1887	February 22.	Golden Rod.
Arizona	1895	Friday following 1st day of April, also 1st day of Feb.	
Arkansas	1895	1st Saturday in Mar.	Apple Blossoms.
California		Observed by separate counties, but not generally.	Eschscholzia.
Colorado	1890	Third Friday in Apr.	Columbine.
Connecticut	1886	Date fixed by Gov.	
Delaware	1901	Date fixed by Gov.	Peach Blossom.

Florida	1886	First Friday in Feb.	
Georgia	1890	First Friday in Dec.	
Idaho	1886	Last Monday in Apr.	Syringa.
Illinois	1888	Date fixed by Gov.	Rose.
Indiana	1887	Last Friday in Apr., and Oct.	Corn.
Iowa	1887	Date fixed by Gov.	Wild Rose.
Kansas	1887	Date fixed by Gov.	Sunflower.
Kentucky	1894	Date fixed by Gov.	Golden Rod.
Louisiana		January 22.	Magnolia.
Maine	1887	Date fixed by Gov.	Pine Cone and Tassel.
Maryland	1889	Date fixed by Gov.	Golden Rod.
Massachusetts	1886	Last Sat. in April.	
Michigan	1885	Last Friday in Apr.	
Minnesota	1895	Date fixed by Gov.	Moccasin.
Mississippi	1902	December 10.	Magnolia.
Missouri	1886	Friday after first Tuesday in Apr.	Golden Rod.
Montana	1895	Second Tuesday in May	Bitter Root.
Nebraska	1872	April 22.	Golden Rod.
Nevada	1887	Date fixed by Gov.	
New Hampshire	1885	No date fixed; usual- ly in May.	
New Jersey	1884	Date fixed by Gov.	
New Mexico	1891	Second Friday in March.	
New York	1889	Friday following first day of May.	Rose.
North Dakota	1890	First Friday in May.	Wild Rose.
North Carolina		October 12.	
Ohio	1882	Date fixed by Gov.	Scarlet Car- nation.
Oklahoma		Friday after second Monday in Mar.	Mistletoe.
Oregon	1887	Second Friday in April.	Oregon Grape.
Pennsylvania	1887	Date fixed by Gov.	Golden Rod.
Rhode Island	1886	Second Friday in May.	Violet.
South Carolina	1889	Third Friday in Nov.	
South Dakota		Date fixed by Gov.	Pasque.
Tennessee	1887	Date fixed annually in November.	
Texas	1889	February 22.	Blue Bonnet.
Utah	1896	April 15.	Sego Lily.
Vermont	1885	Latter part of Apr.	Red Clover.
Washington	1892	Irregularly observed, different dates east and west of the Cascades.	Rhododen- drom.
West Virginia	1881	Third Friday in Apr.	Maximum.
Wisconsin	1889	Date fixed by Gov.	
Wyoming	1888	Date fixed by Gov.	

J. STERLING MORTON.

No Arbor Day Annual would be quite complete without fondly remembering its worthy originator and founder, the late Hon. J. Sterling Morton, of Nebraska.

The custom of tree-planting dates far back into antiquity. The old Mexican Indians planted trees on certain days of the year at the full of the moon, naming them after their children; the ancient Aztecs are said to have planted a tree every time a child was born, giving the tree the name of the child. "Among the Germans it has been for ages the custom for each member of the family to plant a tree at Whitsuntide."

All are familiar with the "Timber Culture Act," now repealed. How to protect our forests from wanton depredation and waste, how to increase their growth, how to arouse public sentiment in all forestry matters, have, during the past forty years, often been considered by congress, by our state legislatures, by our agricultural societies, and by the American Association for the Advancement of Science.

It was in 1872 that a practical movement, resulting in a strong-national movement, was inaugurated by the late Hon. J. Sterling Morton of Nebraska, which has done more for the protection of our forests and the encouragement of tree planting than all our legislation. This was the establishment of Arbor Day, or tree planting day.

"It was the happy thought of this pioneer settler on the treeless plains of Nebraska, who knew and felt the value of trees about the home, as well as their importance for the many uses of life, to enlist his neighbors and his fellow settlers throughout the state, by a common impulse, growing out of the common wants and feelings, in the work of tree-planting on one and the same given day. By his effort the 10th day of April, 1872, was adopted as Arbor Day in his state, and on that Arbor Day, the first ever observed in our country, more than 1,000,000 trees were planted. Since that time we learn that more than 1,000,000,000 trees have been planted and are now in a healthy growing condition in that state through the united efforts of the school children and their parents on Arbor Day. All these trees are now thriving in a state on whose grassy plains scientists had often declared that trees would not grow, the few specimens formerly existing there being found along its water courses and streams. Neb-

raska was once almost a treeless area. Now it is a state with millions of young growing trees, due almost wholly to the Arbor Day planting started by the Hon. J. Sterling Morton in 1872. So contagious was the spirit of tree planting and Arbor Day observance originating in Nebraska that in the course of the next thirty years nearly every state and territory had enacted laws relating to tree planting and the observance of Arbor Day.

—EGLESTON.

The originator of the idea lived long enough to see Arbor Day adopted in more than forty states and territories, to record millions and millions of trees added to the growing prosperity of the states, to note thousands of school buildings change cheerless surroundings for those of comfort and beauty, and to feel, that in stimulating the planting of trees, he had been an active factor in fostering the love for the school, the home and our country.—Colorado Arbor Day Book, 1907.

In 1885 Arbor Day, April 22, Morton's birthday, was made a legal holiday in Nebraska. Nebraska is now known as the "Tree Planter's State."

Arbor Day is often referred to as "Nebraska's Gift to the States of the Union," and the Hon. J. Sterling Morton is known and referred to as the "Originator of Arbor Day."

A Riddle.

I have only one foot, but thousands of toes;
My one foot stands, but never goes.
I have many arms, and they're mighty all;
And hundreds of fingers, large and small.
From the ends of my fingers my beauty grows,
I breathe with my hair, and I drink with my toes.
I grow bigger and bigger about the waist,
And yet I am always very tight laced.
None e'er saw me eat—I've no mouth to bite;
Yet I eat all day in the full sunlight.
In summer with song I shake and quiver,
But in winter I fast and groan and shiver.

—George McDonald.

The Little Bird.

The habits of each little bird,
And all its patient skill,
Are surely taught by God himself,
And ordered by his will.

—Selected.

The Birth of Arbor Day.

In the prairie State of Nebraska,
One happy April morn,
On a fair day in the springtime,
Our Arbor Day was born.

The prairies were green and grassy,
Like beautiful billowy seas.
But the people in vain were longing
For a sight of the leafy trees.

So their council assembled together
The first month of the year;
They said, "A day shall be chosen
When Springtime draweth near.

To plant the trees, for we love them,
We'll make this state of ours
One glorious leafy arbor
For children, birds and flowers."

Then all the people helped them,
Till many thousands of trees
Throughout the State of Nebraska,
Rejoiced in the summer breeze.

And wise, good Governor Morton,
Oh, did he understand,
That the beautiful plan he started
Would spread o'er all the land,

Till in many a State of the Union,
Myriads of trees would spring
In beautiful shining splendor
His honor and praise to sing?

—NELLIE R. CAMERON.

SOME INTERESTING FACTS ABOUT TREES.

The costliest tree in the world is the plane tree, growing in Wood street, London, England, occupying space which, but for its being there would bring in a rental of \$1,500 a year, and this capitalized in 30 years' purchase gives a value of \$45,000.

The largest tree in the world is the great chestnut tree at the foot of Mt. Etna which is called the "Chestnut Tree of a Hundred Horses," and is thought to be one of the oldest trees in existence. Five enormous branches rise from one great trunk, which is 212 feet in circumference. A part of the trunk has been broken away and through its interior, which is hollow, two carriages can be driven abreast.

The largest fruit tree in the United States is a peach of the Crawford variety, standing on the farm of Allen Harris, in Kern County, Maryland. It measures 67 inches in circumference and 22 inches in diameter. Three of the limbs are 22 inches, 29 inches and 30 inches in circumference respectively.

One of Missouri's giant trees, felled on a farm near Laclede, a few years ago, had a diameter of 6 feet, and from it were made 505 good fence posts and 15 big loads of wood. Its age was estimated at 240 years.

In Terre Bonne, Parish, Louisiana, the largest orange tree in the South grows. It is 50 feet high and 15 feet in circumference at the base, and has often yielded 10,000 oranges per season.

An old giant tree is the largest apple tree in the state of New York. It stands near the town of Wilson, and was planted in 1815, its highest yield being 33 barrels of apples in a single season.

California is noted as the land of wonderful trees, and the Mariposa Grove is known far and wide as "The Big Tree Country." "Wawona," sometimes called "The Tunnel Tree," has a roadway cut through the solid heart which is 27 feet through, ten feet high, and ten feet wide. The Grizzly Giant redwood contains enough lumber to build a box that would enclose the Masonic Temple of Chicago. According to actual measurement the girth of this tree at a height five feet from the ground is 98 feet ten inches.

The most sacred tree in the world is probably the sacred bo. On the night of October 7, 1887, a terrible storm raging on the Island of Ceylon threw to the ground what probably up to that time had been the oldest tree in the world, the sacred bo of Ceylon. The oldest written description of this wonderful tree known to exist is that by Fa Hiam, a Chinese historian and traveler who visited the tree in the year 414 A. D. It was then 702 years old, having been planted by King Devinpiatissa in the year 228 before our era began. If the above date is correct, this bo tree was more than 2,175 years old when the storm ended its career on the first mentioned night.

Georgia has a quivering tree, so called because every limb, both large and small, on the tree, trembles as in fear, or as a suffering animal would quiver, and this occurs when not a breath of air is stirring.

There is a tree in Persia designated as "The Sorrowful Tree," the first bud of which opens when the first star appears in the evening. As the night advances and the stars thickly stud the sky the buds continue gradually opening until the whole tree looks like one immense white flower. When dawn approaches, however, the "Sorrowful Tree" closes its flowers and before the sun is fully risen not a single blossom is seen. A sheet of snow-white flower-dust covers the ground around the foot of the tree, which looks withered and dead during the day, while, however, it is preparing for its next nightly performance. The fragrance of the blossoms is like the smell of the evening primrose. If the tree is cut down close to the roots, a new plant soon springs upward and attains maturity in an incredibly short time. Near this curious tree there usually grows another, almost its exact counterpart but less beautiful, and blooming only in the daytime.

In the Canary Islands is a weeping tree which is wet even in a drought, constantly distilling water in its leaves, while Arabia is noted for its famous laughing tree. The seeds of this plant produce the same

effect upon persons as laughing gas. The plant grows from two to four feet high, with woody stems, wide-spreading branches and bright green foliage. Its fruits, yellowish in color, are produced in clusters. The flavor of the seeds, the size of a Brazilian bean, is a little like opium, and their taste is sweet, while the pods containing them are soft and wooly in texture. The seeds when taken in small quantities, cause a man to laugh loudly, boisterously, and then he sings, dances and cuts all manner of fantastic capers. The odor of them however, produces a sickening sensation, and is slightly offensive.

In Central America has been found the electric light tree, the milk tree and the bread tree, the first of which gives a light so strong that a person can read or write by it at night. The milk tree has a thick, tough skin that can be used for half-soleing shoes, and the tree is milked by boring a hole into the trunk, when it will let down sap as white and sweet as any cow's milk. The bread tree has a solid fruit, a little larger than a cocoanut, which, when cut into slices and cooked, can hardly be distinguished from excellent bread.

In Africa has been discovered a tree that yields butter. While not as good as that churned from cream, it can be made somewhat similar in taste by salting. It is easily made into soap by heating with a solution of potash or soda.

The most important article for illuminating purposes in Japan is the candle made from the fruit of what is known as "the vegetable wax tree." The berries are a small pea-size, of a white color, hanging in clusters, and containing the wax as a thick white coating of the seed. To obtain the wax the berries are crushed, strained and pressed in hemp bags, or the bruised seeds may be boiled and the wax skimmed from the top.

An electrical tree grows in India, the leaves of which are so highly charged with electricity that whenever one is touched the individual making the investigation receives a shock that almost knocks him down. Even upon the magnetic needle this tree, scientifically known as *philotcea*, has a strong influence, causing magnetic variations at a distance of seventy feet. The electric strength of the tree varies according to the time of day, being most powerful at noon.

A curious tree was discovered a few years ago by the well known naturalist of Bavaria, Prof. Schelwisch, in Africa, which is known as the iron tree. The leaves, although very thin, are bent with great difficulty. In order to secure one a file must be used. The tree is a great metal eater, eagerly devouring any metal with which its roots may come in contact. It changes its color to the color of the metal last absorbed.

Newton, N. C., has a smoking tree. It is a white mulberry about thirteen years old with a bushy top and many lateral branches. Puffs of smoke, identical in appearance with cigarette smoke, are often seen starting from various parts of the tree, sometimes from the leaves, sometimes from the bloom, sometimes from the bark of the limb or trunk. The puffs are at irregular intervals, occasionally two or three at once, and again they are several seconds or half-minute apart.

In Scotland, the poor man's hut is lighted by torches made of the

branches of the Scotch fir. Owing to the resinous nature of the wood this fir burns most brilliantly. In the barren parts of Sweden and Lapland the peasants select the oldest and least resinous of the branches, remove the bark, grind and mix with their meal and make into cakes called "bark bread."

The calabash tree grows in the islands of the West Indies, and resembles our common New England apple tree in height and size. It has wedge-shaped leaves and large, whitish fleshy blossoms that grow on the trunk and big branches. The fruit is somewhat like a common gourd, only a great deal stronger, and often measures 12 inches in diameter. The hard shell of this is cut into various shapes by the natives, and is rather handsomely carved. It is made into drinking cups, dishes, and pails.—Denver Republican.

A Tree Freak:

Among the curiosities of tree life is the sofar, or whistling tree, of Nubia. When the wind blows over this tree it gives flutelike sounds, playing away to the wilderness for hours at a time, strange, weird melodies.

It is the spirits of the dead singing among the branches, the natives say, but the scientific white man says that the sounds are due to a myriad of small holes which insects bore in the spines of the branches. The weeping tree of the Canary Islands is another arboreal freak.

This tree in the driest weather will rain down showers from its leaves, and the natives gather up the water from the pool formed at the foot of the trunk and find it pure and fresh. The tree exudes the water from innumerable pores at the base of the leaves.—National Forum Butte, Montana, January 25, 1910.

ARBOR DAY BREVITIES.

1. J. Sterling Morton, of Nebraska, Secretary of Agriculture in President Cleveland's cabinet, was the founder of Arbor Day.

2. If the Mississippi is the "Father of Waters," the forest is the father of the Mississippi.—J. J. Jusserend.

3. The time needed to grow a railway tie in our forests runs from 35 to 50 years according to the kind grown and the cultivation given to it. The time needed for an ordinary fence post to grow is from twenty to thirty years.

4. The birds are often called our insect police.

5. More rain falls every year in the forests than in the open field. One tenth of this rain is caught by the leaves and held, and then afterwards dropped down gradually to the earth. This is better for the soil than if it all fell upon the earth at once.

6. Trees make the air purer. The leaves take the impure air which we breathe out. They make it over in their little cells and give it back to us pure again.

7. Strange as it may seem, "Japan has 59 per cent of her total area

under forests. In fact Japanese forests have been managed longer than those of Europe. They were controlled before the Christian era, and during the early Christian centuries forest planting on water sheds to prevent floods was enforced by frequent edicts, and the felling of trees was supervised by officers of the province. As a result Japan alone among the nations began modern industrial progress with its forests not only unimpaired but improved after centuries of use.”—Treadwell Cleveland.

8. The Pennsylvania Railroad has undertaken forestry work upon a scale larger than that of any other railroad corporation. Since they began this work in 1902 they have planted 3,482,186 trees, 1,054,010 being planted in 1909.

9. Are we aware that our Government maintains a big institution the primary purpose of which is both to encourage and actually carry on tree-planting? This establishment is a branch of the United States Forest Service. It has in charge the management of our forests and concerns itself largely with tree-planting and forest extension.

10. Last year Uncle Sam's official tree-planters set out upward of half a million trees, most of them located in the national forests. Not only does the government plant trees in the national forests, maintaining its own nurseries as a source of supply, but it aids private owners who desire to set out trees on their property. Uncle Sam is also conducting valuable experiments in nursery and planting work in co-operation with nine different state universities and State Agricultural experiment stations. These experiments are made to learn what species are best adapted to different regions and to improve methods of planting and cultivation.

11. In years gone by it too often happened that trees planted with great ceremony on Arbor Day in April died of neglect before September. Now an effort is made to see to it that trees are not planted on dry, windy days or when the conditions are otherwise unpromising; effort is also being made to provide hardy trees, and precautions taken to insure for the trees such subsequent care as will keep them constantly thrifty.

12. The principal railroad and telegraph companies are paying \$6.00 a piece for 35-foot poles. A Eucalyptus tree will grow a 35-foot pole in less than ten years, and 800 can be grown on an acre. Assuming that only 500 will be ready to be cut in ten years, which is a very conservative estimate, and that the net returns will be only \$5.00 each, the proceeds from an acre of Eucalyptus will be \$2,500.00, or \$25,000.00 from a ten acre estate. And the estates will still produce a steady, permanent, annual income, because there remain 3,000 trees which have not been cut and those which have been cut grow from the stump much more rapidly than from the original seedling on account of the established root system.

13. The lumber industry is fourth among the great industries of the United States. In 1907 forty billion board feet of lumber was produced at a cost of about \$675,000,000.—Forest Service Circular No. 171.

14. About 700,000 trees were planted during the winter and spring

of 1908, the greater part in the Nebraska, Kansas, Santa Barbara and Pike National Forests. For this purpose over five tons of the seeds were collected during the fall of 1908. This amount will be sufficient to sow about ten square miles of denuded land.—Forest Service Circular No. 171.

15. Dear School Trustees: How many years have elapsed since your school house has had a coat of paint? Is the building a credit to your community? Do you know that it does not cost a very large sum to paint the ordinary country schools?—New York Arbor Day Manual, 1908.

16. Dear School Teachers: Have you ever talked with your pupils about keeping the school room neat and clean and the grounds attractive? Are there any pictures on the walls of your school room? Does the floor need scrubbing? Are there any piles of rubbish in the yard?—New York Arbor Day Manual, 1908.

17. The tree planter and the teacher united in one shall be declared the best benefactor of modern times—the chief provider for posterity.—J. Sterling Morton.

18. Our yards, our school house yards, and the resting places of our dead, should not be neglected, but should be adorned with nature's own beauties, the trees.—Emma F. Bates.

19. Do not rob or mar a tree unless you really need what it has to give you. Let it stand and grow in virgin majesty, ungirdled and unscarred, while the trunk becomes a firm pillar of the forest temple, and the branches spread abroad a refuge of bright green leaves for the birds of the air.—Dr. Henry VanDyke.

20. The man who builds does a work which begins to decay as soon as he is done, but the work of a man who plants trees grows better and better, year after year, for generations.

21. To own a bit of ground, to scratch it with a hoe, to plant seeds and watch their renewal of life—this is the commonest delight of the race, and the most satisfactory thing one can do.—Charles Dudley Warner.

22. There is no spot on earth which may not be made more beautiful by the help of trees and flowers.—Holmes.

23. With every green tree that surrounds us with its leafage, with every shrub on the roadside where we walk, with every grass-blade that bends to the breeze in the field through which we pass, we have a natural relationship; they are our true compatriots. The birds that leap from twig to twig in our gardens, that sing in bowers, are part of ourselves.—Goethe.

24. A man does not plant a tree for himself; he plants it for posterity and sitting idly in the sunshine, I think at times of the unborn people who will to some extent be indebted to me. Remember me kindly, ye future men and women.—Alexander Smith.

25. What conqueror in any part of life's battle could desire a more beautiful, a more noble or more patriotic monument than a tree planted by the hands of pure and joyous children, as a memorial to his achievements?—B. J. Lossing.

26. Do not fail to plant something on Arbor Day. If it is but a rose bush, a grape vine or row of sweet peas, contribute this much in honor of the occasion. Your reward will come later.

27. Taking the Account of Stock: By this is meant that our forest rangers will take an account of stock of trees,—that is, they will be able to tell you the name, kind, and variety of every tree growing on our forest reserves, the number of trees growing thereon, the value of them, and also the condition of health the trees are in. This is something new.

28. Oregon has one-sixth of the standing timber of the United States, or more than any other State. Government estimate, three hundred billion feet. Portland ships more lumber annually than any other port on earth—for the past two years production has averaged 2,000,000 feet for every working day of the year.—Bulletin by Portland Commercial Club.

DO YOU KNOW

That the tree is like a mill that runs itself?

The raw materials it uses are the minerals from the soil and the gases from the air.

The leaves are the machinery that take charge of the raw material and make it into the finished product, sap, that goes to feed every part of the tree.

The sunlight is the power that runs the machinery.

The waste products of this mill that the leaves send off into the air are the very things that we human beings need most, oxygen to breathe and moisture.

Do you know of any other manufactory that runs itself, furnishes its own materials and gives away its products to bless and brighten the world?

That trees are the oldest living inhabitants on the face of the globe? That there are trees living now in California that were already one thousand years old when Columbus discovered America?

That the trunk of a tree one foot in diameter, and twenty feet high can bear a weight of over thirty tons (61,600 lbs.)

That a full-grown tree sends out 187 gallons of water a day through its leaves into the air? Think what a difference that makes in hot, dry weather.

“Many a traveler in the heat,
Finds the cooling shade most sweet,
Stops to rest within the shade
That some wayside tree has made,
Feels the moist and dewy air
From a hundred leaflets fair
Fan his heated brow today,
And I think I hear him say,
‘Children, will you plant a tree
Every Arbor Day for me?’”

—Shade Tree Commission, City of Newark, N. J.

BEAUTIFYING OUR SCHOOL PREMISES.

The science of the beautiful in nature and art ought to be taught at all times in our schools but more particularly during the Arbor Day season.

If the Arbor Day season were conscientiously observed by the people in every school district, the unsightly buildings, and treeless, barren school grounds, of which we have such a number, would soon be replaced by attractive and beautiful premises.

To develop in the pupils a love for the useful, beautiful and the ornamental, to bring to their minds the blessings derived from trees and to arouse them to the necessity of tree culture, are the prime objects of all Arbor Day exercises.

Let each corner of our school yards and their approaches have its trees and shrubs planted and constantly cared for by the school children. Let the roadsides be planted with trees and shrubs. They are nature's fittest and choicest decorations.

"Plant shade trees, plant ornamental trees, plant fruit trees, beautify the plains with trees, plant them to beautify and adorn the school grounds," are the sentiments constantly coming from Nebraska on each Arbor Day.

"Tree planting is a question of public economy," says Governor Adams of Colorado. "It is an act of patriotism." A child that loves and cares for trees, flowers and birds, will never become a bad citizen. Groves, blossoms, birds, are nature's poetry. In a treeless country you can never hear the celestial harmonies that the poets heard the wind play among the trees."

"Inspiration, patriotism, manhood, are seldom the products of a treeless land. Can we imagine a Wordsworth, a Scott, or a Longfellow without forests? There is no story of liberty that has not its trees; they blend with every memory of life. Art literature, and mythology draw from trees some of their richest beauty."

"The life of a tree touches a more remote past and reaches to a more distant future than any other living thing. Some of the Cedars of Lebanon have lived through every age of the Christian Calendar."

"There is a close affinity between the forest and a regular water supply. Every tree becomes a miniature reservoir, preserving for greater usefulness every inch of water from spring or cloud."

“Every bunch of grapes, every peach, every apple that gathers its color and flavor from our wonderful climate is the fruit of other Arbor Days.”

“As we received much from our ancestors, we owe much to posterity, and in no way can we make a greater payment on the debt than by planting trees. Trees are almost immortal. Their lives span the generations, becoming a proud memorial, a rich inheritance we bequeath to those coming after us. We are blest with valleys as rich as Eden, with mountains, skies, and climate that are ideal. We need only trees and verdure to become a home of beauty and enchantment. If for each one of our population we should plant each year but a single tree, our descendants would soon revel in a true Edenic land of beauty, happiness and prosperity. Hopeless is the man or community that has no regard for trees. It is difficult to love a land that has no trees. The sentiment, “This is my own, my native land,” was not born and finds scant echo where there are no hills nor trees.”

I ask our citizens to remember that: “He who plants a tree, or shrub, or a flower, works with God to beautify the garden of the world.”

The vast majority of our school grounds are without ornamentation. Instead of being the brightest and most inviting spot in the community, they too often are quite the dullest. In some localities where the private lawns are well kept and beautiful, the school grounds are bare, cheerless, unsightly, and uninviting. Once the people are awakened to the real importance of this question, they will rise to meet it with both their time and means.”—Tree Planting and School Room Decoration, Lincoln, Nebraska, April, 1905. (Reprint from Arbor Day Manual of 1909.)

Teaching.

One impulse from a vernal wood
May teach you more of man,
Of moral evil and of good,
Than all the sages can.

—Wadsworth.

OUR FOREST RESERVES AND THE MARKET VALUE OF TREES.

"The forest reserves in the United States cover an area of 14,146,240 acres, an area equal to the entire area of all the New England states, New York, New Jersey, Delaware, Maryland, Virginia, West Virginia, and 24,000 square miles besides. This is an area equal to the combined areas of Great Britain, Denmark, Belgium, Holland, Switzerland, Bavaria, Bohemia, Ceylon and Sicily. There is one acre out of every two hundred on the surface of the earth in forest reserves alone. In other words, our forest reserves are in area equal to a strip of land nine miles wide running entirely around the earth at the equator.

"Or, if you would place the forest reserves in a strip at the 40th parallel, the parallel running through Philadelphia, Columbus, Indianapolis and Denver, and extending from ocean to ocean, it would make a strip 86 miles wide and 2,650 miles long.

The area of forest reserves in Idaho amounts to 37.4 per cent of the area of the entire state. The forest reserves and the public lands of the United States combined are larger in area than the twenty-six states of the Union east of the Mississippi river. The forest reserves and the public lands comprise $29\frac{1}{2}$ per cent of the entire area of the United States and 1.7 per cent of the area of the land of the entire world. These lands would make a strip around the earth at the equator 35.7 miles wide, or following the 40th parallel, it would make an empire 336 miles wide, extending from the Atlantic to the Pacific."

The report of the director of the mint for 1894, the report of the Department of Agriculture for 1894, and the best estimates of the value of the products of our forests for the same year show that our forest crop exceeded by about \$15,000,000 the combined value of our output of gold, silver, iron, copper, lead, zinc, coal, lime, natural gas, petroleum, etc., and the value of our wheat, corn, oats, rye, barley and buckwheat, for 1896. N. H. Egleston.

Our soil and climate produce a much larger variety of valuable timber than any European country. Our American hickory, black walnut, hard maple, and wild cherry, for instance have no equals in Europe. They excite the envy of European carriage makers, furniture men and manufacturers of tools. Besides growing taller than in Europe, the most useful trees attain full

development here in two-thirds of the time there required, an advantage which can not be over estimated.

Austria and Italy make forest culture an unfailing source of yearly revenue. They make it profitable to buy tracts of inferior lands at prices equal to those of our best farming lands, and to stock them with timber. Many private owners, also derive large incomes from their forests without ever diminishing their area.

Forests are divided into as many equal parcels as the trees require years for development. They are cut in rotation, one each year, and immediately replanted after clearing. Only the better class of wheat or meadow lands net a greater average revenue in twenty-five years than well managed forests. This is a fact which at first sight seems incredible, but which is easily understood when the yearly expenses of grain culture and the small outlay required for maintaining the forest are compared, and by taking into consideration the frequent failure of the grain crops, and the sure steadiness of the growth of trees.—Reprinted from Arbor Day Manual of 1909.

HOW TO PLANT A TREE.

I. Dig the hole wider and deeper than the tree requires. If the tree just fits the socket the tips of the roots will meet a hard wall which they are too delicate to penetrate, hold fast to, or feed in.

II. Be sure that the surface soil is hoarded at one side when the hole is dug. This soil is mellow and full of plant food. The under soil is harder and more barren. Some rich garden soil can well be brought over and used instead of this subsoil.

III. Take up as large a root system as possible with the tree you dig. The smaller the ball of earth, the greater the loss of feeding roots and the danger of starvation to the tree.

IV. Trim all torn and broken roots with a sharp knife. A ragged wound below or above the ground is slow and uncertain in healing. A clean, slanting cut heals soonest and surest.

V. Set the tree on a bed of mellow soil with all its roots spread naturally.

VI. Let the level be the same as before. The tree's roots must be planted, but not buried too deep to breathe. A stick laid across the hole at the ground level will indicate where the tree "collar" should be.

VII. Sift rich earth, free from clods, among the roots. Hold the tree erect and firm; lift it a little to make sure the spaces are well filled underneath. Pack it well down with your foot.

VIII. If in the growing season, pour in water and let it settle away.

This establishes contact between root hairs and soil particles, and dissolves plant food for absorption.

IX. Fill the hole with dirt. Tramp in well as filling goes on. Heap it somewhat to allow for setting. If subsoil is used, put it on last. Make the tree firm in its place.

X. Prune the top to a few main branches and shorten these. This applies to a sapling of a few years whose head you are able to form. Older trees should also be pruned to balance the loss of roots. Otherwise transpiration of water from the foliage would be so great as to overtax its roots, not yet established in the new place. Many trees die from this abuse. People cannot bear to cut back the handsome top though a handsomer one is soon supplied by following this reasonable rule.

XI. Water the tree frequently as it first starts. A thorough soaking of all the roots, not a mere sprinkling of the surface soil, is needed. Continuous growth depends on moisture in the soil. Drainage will remove the surplus water.

XII. Keep the surface soil free from cakes or cracks. This prevents excessive evaporation. Do not stir the soil deep enough to disturb the roots. Keep out grass and weeds.

—From Ohio Arbor Day Annual, 1906, as taken from "The Tree Book," Doubleday, Page & Co.

HISTORIC TREES.

I do not wonder that the great earls value their trees, and never save in the direst extremity, lift upon them the axe. Ancient descent and glory are made audible in the proud murmur of immemorial woods. There are forests in England whose leafy noises may be shaped into Agincourt, and the names of the battlefields of the Roses; oaks that dropped their acorns in the year that Henry VIII., held his Field of the Cloth of Gold, and beeches that gave shelter to the deer when Shakespeare was a boy. There they stand, in sun and shower, the broad-armed witnesses of perished centuries; and sore must his need be who commands a woodland massacre. A great tree, the rings of a century in its boll, is one of the noblest of natural objects; and it touches the imagination no less than the eye, for it grows out of tradition and a past order of things, and is pathetic with the suggestions of dead generations. Trees waving a colony of rooks in the winds today are older than historic lines. Trees are best antiques. There are cedars on Lebanon which the axes of Solomon spared, they say, when he was busy with his Temple; there are olives on Olivet that might have rustled in the ears of the Master of the Twelve; there are oaks in Sherwood which tingled to the horn of Robin Hood. Think of an existing Syrian cedar which is nearly as old as history, which was middle-aged before Rome was founded; think of an existing English elm in whose branches the heron was reared which the hawks of Saxon Harold killed! If you are a notable and wish to be remembered, better plant a tree than build a city or strike a medal—it will outlast both.—Alexander Smith.

Some Familiar Historic Trees.

Note to the teacher: We suggest to you to allow you pupils to secure information relating to the trees below mentioned, and then to write short descriptions of them for the information of all the scholars and parents.

1. The Treaty Elm of Philadelphia.
2. The Charter Oak of Hartford, Connecticut.
3. The Liberty Elm of Boston.
4. The Washington Elm at Cambridge, Mass.
5. The Burgoyne Elm at Albany, New York.
6. The Big Trees of California.
7. The Apple Tree of Appomatox.
8. The Baobab Tree of the Cape Verde Islands.
9. The Banyan Trees of India.
10. The Cedars of Mt. Lebanon.

FACTS ABOUT THE VALUE AND USES OF FORESTS.

A toothpick is a little thing, yet it is reported that one factory uses 10,000 cords of wood annually in the production of these splints of wood.

Shoe pegs are small affairs; yet a single factory sends to Europe annually, 40,000 bushels of pegs, besides what it sells in this country.

A spool is of small account when the thread is wound off; yet several factories use each from 1,800 to 3,500 cords of wood every year in making these articles. Thousands of acres of birch trees have been bought at one time by thread manufacturers, for the sole purpose of securing a supply of spools.

Who thinks much of the little friction match, as he uses it, to light the lamp or fire, and then throws it away? But one factory, it is said, makes 60,000,000 of these little articles every day, and uses for this purpose 12,000 square feet of the best pine lumber.

Forests affect the climate of a country; influence the rain of a country; build up a wall and protect the crops; they keep the air pure. The leaf-mold in the forest holds back the rains. We draw \$700,000,000 worth of products every year from the trees. No other crop equals this in value.

About 60 per cent of all our railroad ties are made of white oak; nearly 20 per cent are pine. Since every mile of railway needs about twenty five hundred ties, and there are over two hundred thousand miles of such roads in our country, it takes millions of acres of timber to supply a single set of ties. Such a set has to be replaced about every seven years. Thus it is that the railways rank among the greatest consumers of wood in the country.

Our telegraph and telephone poles are made largely of hemlock and cedar. The price paid for such timber varies from two to ten dollars per pole.

Flour barrels are made largely from elm. Barrels for liquids are made from a fine grade of white oak; also ash and elm.

Our furniture is made from walnut, ash, oak, maple, and other hard woods.

White oak and hickory are used in the manufacture of wagon and buggy wheels. Soft woods, as poplar, aspen, spruce, pine and basswood, are used in the manufacture of paper such as is used in newspapers, notebooks, etc.

Three-fourths of our lumber is made from soft woods, such as white pine, spruce, hemlock and redwood.

The woodwork of machinery is made from hard lumber, which constitutes about one-fourth of our lumber output. It comes principally from the wide region east of the Mississippi, between the northern and southern soft wood belts.

The great pineries of Wisconsin, Minnesota and Michigan, supply our white pine, the most useful timber in the north temperate zone, because it is in greatest demand for building purposes.

The bark of the hemlock tree is used in the tanning of leather.

Corks are made from the bark of the cork oak, which grows only in the Mediterranean countries and Portugal.

As a national industry, forestry stands second only to agriculture in number of persons and amount of capital employed and in the value of product.

It has been estimated that we have five hundred million acres of growing forest, and that thirty-five cubic feet of wood are produced annually per acre. Reprinted from *Arbor Day Manual*, 1909.

THE MATCH INDUSTRY.

“The civilized nations of the world strike three million matches every minute of the twenty-four hours. Nearly one-half of these are ignited in this country. Americans use up the enormous total of seven hundred billion a year, and have a larger match bill than any other nation in the world.

Hundreds of factories over the country are engaged in the industry, about which the general public knows but little. Some of the factories are very large; one on the Pacific Coast covers 240 acres, and has thirty-two miles of railroad to supply the match machines with 200,000 feet of sugar pine and yellow pine logs a day.

Wood for matches is a much more serious problem in some of the European countries than it is as yet in the United States. The most suitable match timbers, are, pine, linden, aspen, white cedar, poplar, birch and willow. Others, however, are occasionally used. Germany imports willow and aspen from Russia. Some time ago the German match manufacturers petitioned the minister of agriculture to cause the foresters to plant aspen in

the state forests to supply wood for matches without importing.”

“In the United States, as well as in Canada, a diligent search for choice forests is maintained, and very large tracts have been bought by companies in the match business, not only to meet present demands, but to provide for years to come. In a single year one match company cut 225 million board feet of pine in the Lake region. There are more than 150 match manufacturers in the United States and about half that number in Canada.

If forced to economize, the people of this country might get along with fewer than twenty-five or thirty matches a day per capita as at present; but they will probably insist on having them, and will demand, as in Germany and France, that foresters plant and grow timber especially for matches. This could readily be done if forests were placed under competent management and not left to run wild, producing cord wood and brush when they ought to grow merchantable timber.”—Forestry and Irrigation.

INDUSTRIAL EDUCATION.

The tendency of our people in all parts of the country toward industrial education has been an interesting feature in educational circles for the past twenty-five years. It has been the leading feature for the last ten years. Today industrial education is the all absorbing subject of the times. It is engaging the attention of the state superintendents, presidents of universities, colleges, normal schools, and educators everywhere and in all the walks of educational life.

To meet the demands of business, industrial education is being developed along many lines,—business education, manual training, domestic science, elements of agriculture, and the school garden, all in order to fit and to enable the young and growing students to solve the bread and butter problems of life. Business education and manual training are the best known to our public and have been the longest taught. The other subjects are known about in the order given. The locality, however, of any school district, the sentiments of its people, the influence of its trustees and other school officials, determines of course whether some one or all of these branches of industrial education shall be taught in the public schools.

In the United States the school garden movement has within a few years developed with a rapidity that is evidence of the convincing nature of its appeal to those who have the educational welfare of the country most closely at heart.

Since the planting, nearly twenty years ago, in Roxbury, Mass. of the first American school garden, the idea has taken root in many widely separated states until at the present time there is a chain of pioneer school gardens reaching from Bath, Maine, to Los Angeles, California.

The school garden, although as yet a comparatively new feature in America, has long been valued abroad as an important factor in the education of children, and in several countries antedates the establishment of the public school system.

The Rhode Island Arbor Day Annual of May 1908, gives us the following information :

“A garden,” said Comenius, the most celebrated educational reformer of the 17th century, “should be connected with every school where children can at times gaze upon trees, flowers, and herbs and be taught to enjoy them.”

Germany is often said to be the leader in the school garden movement, for although school gardens have not been officially incorporated as a part of the German school system, yet Germany's experience in this new form of education extends over a period of eighty years.

In 1814 instruction in the culture of fruits and vegetables appears as a part of the rural school program of several German states. Today in Germany there are thousands of elementary school gardens, and careful attention is given to the training of teachers for this work.

The Austrian Imperial school law of 1869 requires that “a garden and place for agricultural experiments shall be established at every rural school.” “At the present time there are nearly twenty thousand school gardens, while Bohemia alone has over four hundred thousand school gardens.

Sweden, by royal proclamation in 1869 made gardening a requirement in the legalized schools, specifying that gardens from 70 to 150 square rods be established in connection with their elementary schools.

Switzerland provides gardens in connection with the normal schools in order that teachers may receive the special training to enable them to teach gardening effectively.

School gardens are also required in Belgium by the school law of 1873 which stipulates that every school shall have a garden occupying at least a quarter of an acre, while teachers are required by royal decree of 1897 to give instruction in theory and practice of Botany, Horticulture and Agriculture.

In France special emphasis is placed in all schools upon the teaching of agriculture. By order of the French Ministry of Education, in

1880, the course in the normal schools was made to include such instruction as will enable graduate teachers to carry to the elementary schools an exact knowledge of the soil, the means of improving it, methods of cultivation and management of a farm and garden.

Russia, as well as France, requires every school, receiving public funds, to support a school garden. A school garden in a single province of southern Russia contains, in addition to flowers and vegetables, 111,000 fruit trees, more than double that number of forest trees, and 1,000 bee hives. For several years Russia has supplied special training for teachers along these lines by means of short summer schools in Horticulture, etc. Seeds and books on gardening are distributed free of charge to all schools, while expert gardeners are sent out by the Government to aid teachers in establishing gardens and planning courses of study.

In all these countries where gardening is a regular subject of instruction, the immediate and practical results are everywhere very marked.

In these European countries school gardening has become practically established. These countries have for years by example been teaching us the necessity and value of forestry, and from them in the same manner we are now learning much of the necessity and value of the school garden. They are constantly telling their instructors, and we are now constantly telling our teachers that work in the school garden should be conducted in an orderly, intelligent manner,—that the children should always understand not only what they are doing, but also just why it should be done.—In fact we have much yet to learn from the old country.

SCHOOL GARDENING.

School gardening is the first principle of the great study of agriculture and there should be a garden in connection with every school in the state. The school garden's sole and only use is that of an experimental plot in which to teach the conditions influencing the growth of plants and in which to interest children in the study of plant life. Here the soil may be properly fertilized, carefully prepared, thoroughly pulverized and the seed beds made by the children themselves under the guidance of the teacher or other instructor in charge.

Each pupil should keep a note book in which he records the date of planting, the date when the first plants appear, the progress of their growth, and the time of their successive cultivations. He should also keep a record of the weather conditions from the date of planting, noting the morning, noon and evening temperature, with a thermometer in hand, and whether the day is clear, cloudy or rainy. In this note book he should keep a record of all his work done in this garden.—Oklahoma Arbor and Bird Day, 1909.

E. Davenport, Dean of the College of Agriculture of the University of Illinois, says: "The most significant fact in the agricultural world to day is the demand that agriculture be taught in the public schools."

The progress of school gardens has been most rapid in Europe where there are today more than 100,000 school gardens; France alone has some 28,000, and in Russia, as in several other countries, no school will be accepted by the State to receive state funds unless a garden is connected with it. In America the school garden is of recent origin but is gaining ground rapidly.

As 65 per cent of our exports are products of the farm, it is almost alarming to think that so few of our children know anything about them. One reason why three-fourths of the successful business men of today were brought up on the farm is because of the productive industry taught in early childhood in farm life.

In the Lexington city schools, Kentucky, school gardening after a practice of one year, was found to be the one branch in which the children were more interested than in any other. There is no kind of training that squares itself for all 'round development like this work. The children are taught to use their hands as well as their heads and to learn quick observation and quick decision which is of great value to them throughout their lives. The child's garden certainly brings his life more nearly to that of the country child than any other form of study. As an aid to nature study there is nothing to equal it. It can be used to help in nearly every other branch of study taught in the school room. The practice in measuring and marking out the gardens, and in systematic planting of seeds gives the child the practical mathematics which he so much needs. Much language work can be given in connection with it; in fact it can be correlated with nearly all of the other branches, as it furnishes material for writing, drawing, painting, and geography. The systematic care of tools and the systematic way of doing things and the habits of close observation acquired by the child will form a trait invaluable to him throughout his life.

When the school gardens have been conducted for several years, long enough to make practical tests, it is found that boys having the garden work are thirty per cent more rapid in mental, moral and physical development than those not having gardens. The school garden tends to develop the best traits in the children and to create in them a love for the beautiful.

They begin to understand something of ownership and responsibility and to look more kindly at their neighbor's products, and, as they do not wish to lose their own, that for which they have worked, the value of the product is more forcibly demonstrated to them.

The school garden can be made especially valuable to girls, particularly those in the city, as they do not have the same liberties of the streets as have boys and are in the open air and sunshine all to little for good, strong physical development.—Alice C. Moore, Lexington, Kentucky, Arbor and Bird Day, 1909.

The American people are nothing if not practical. They are a race

of thinkers. As originators they have no superiors, as imitators few equals. They have had their age of fads and nonsense in the school room. Always ready to welcome new features, and new methods in education when practical and beneficial, they are equally as ready to cast off old features and old methods when worn out and no longer serviceable. What new features, if any, might be introduced in our schools that will tend to more rapidly develop the ideas of the children along educational lines? "Tilling the soil," is the answer now heard from scores of educators. "Provide a school garden and get the most out of it," is the common answer coming from a hundred sources. "Place the hoe, rake, and spade in the hands of the children and teach them their practical uses," say others. Give them elementary lessons in agriculture. Heed Solomon's admonition: "Train up a child in the way he should go and when he is old he will not depart from it."

School gardening teaches children how to prepare ground for plants and seeds, how to care for them when growing, how to thin them out, and how to keep the soil in proper condition for their growth. It teaches the simple elements of agriculture to our girls and boys. The children are taught the kinds of soil best adapted to produce each kind of vegetable. In the school garden, radishes, onions, lettuce, beets, tomatoes, cabbages, peas, corn, potatoes, and other vegetables are cultivated and raised on the scientific plan. Garden botany in its practical form is thus taught, and the importance of thorough cultivation of the soil is there impressed upon the children. The effect of this instruction is soon apparent.

Pupils are always quick to imitate their instructors and to put into practical effect the lessons learned at school. When they return home and begin to insist upon changing the old custom and practice of gardening by laying out in squares and rectangles, beds for plants, flowers and vegetables, and to prepare them for seeds, flowers and for the transplanting of vegetables, thus making practical application of the lessons taught them, their parents and the old folks in particular wonder what new ideas and school foolishness have gotten into their heads. But when at harvest time they realize that crops of a far better quality, and often, too, in greater quantity, can thus be raised and at much less labor and cost than formerly, then they will begin to understand and to be convinced that system and science even in gardening produce far better results than their own former crude methods of gardening, and it is safe to predict that in the future system and not chance knowledge and not ignorance, will rule and govern them in all things relating to gardening.—Reprinted from Arbor Day Manual, 1909.

FACTS, EXTRACTS, QUOTATIONS.

Fruit trees along the highways in Belgium made a return of \$2,000,000 in 1898.—W. Virginia Arbor and Bird Day Manual.

“The civilized nations of the world strike 3,000,000 matches every minute of the twenty-four hours. The American people have a larger match bill than any other nation in the world. They consume the enormous total of seven hundred billion matches every year.—Forestry and Irrigation.

In France two-thirds of the entire length of roads are bordered with trees.

In Germany many thousands of miles of roads are shaded by trees, partly forest trees, partly fruit trees.

The cedars of Lebanon are perhaps the best known trees in the world. Religion, poetry, and history have all united to make them famous.

In 1896 there were 7,000 school gardens in Austria.

In France gardening is taught in the primary and elementary schools.

In Sweden, in 1871, there were 22,000 children in the common schools receiving instruction in horticulture and tree planting. Each of more than 2,000 schools had for cultivation from one to twelve acres of ground.—Arbor Day, Its History and Observance, N. H. Egleston.

When we cut down a tree without planting another, we make the world poorer.

The Banyan trees of India are often capable of sheltering thousands of men. One of them in Ceylon throws a shadow at noon over four acres of ground.

A people without children would face a hopeless future; a country without trees is almost as hopeless.—Roosevelt.

The best and highest thing a man may do in a day is to sow a seed, whether it be in the shape of a word, an act, or an acorn.—J. B. O'Reilly.

The tree planter and the teacher united shall be declared the best benefactor of modern times; the chief provider for posterity.—J. Sterling Morton.

The railroads also are planting trees, although it cannot be said they do so with any special reference to Arbor Day. A New England company is setting out ten thousand catalpas and some chestnut and black walnut saplings upon its vacant lands. A western company is about to plant more than a hundred thousand catalpas. Years hence these trees will supply timber for ties, posts and other purposes. The railroads are taking a long look ahead.—W. Virginia Arbor and Bird Day Manual, 1906.

Agriculture is the oldest of the arts and the newest of the sciences.

Manual training has brought the shop and the school together, but the farm and the school are still far apart.

With hand on the spade, and heart in the sky, dress the ground and till it.—Rhode Island Arbor Day Annual, May, 1908.

MEMORY GEMS, NUGGETS, CHIPS.

1. Hail to the Trees!
Patient and generous, mothers of mankind;
Arching the hills, the minstrels of the wind,
Spring's glorious flowers and summer's balmy tents,
As sharers in man's free and happier sense,
The trees bless all, and then brown mantled, stand,
The sturdy prophets of a golden land.
The sturdy prophets of a golden land.—Selected.
2. The groves were God's first temples.—Bryant.
3. I hear the wind among the trees
Playing celestial harmonies.—Longfellow.
4. And Nature, the old nurse, took
The child upon her knee,
Saying: "Here is a story book
Thy Father has written for thee."
"Come wander with me," she said,
"Into regions yet untrod;
And read what is still unread,
In the manuscripts of God."—Longfellow.
5. The best verses I have produced are the trees I have
planted.—Holmes.
6. I can think of no more pleasant way of being remembered than by
the planting of a tree. Birds will nest in it and fly thence with
messages of good cheer. It will be growing while we are sleep-
ing, and will survive us to make others happier.—Felix Oswald.
7. Thoreau says of Spring: "March fans it, April christens it, May
puts on its jacket and trousers."
8. Our homes, our school house yards, and the resting places of our
dead should not be neglected, but should be adorned with
Nature's own beautifiers, the trees.—Emma F Bates.
9. If thou art worn and hard beset,
If thou wouldst read a lesson that would keep
Thy heart from fainting and thy soul from sleep,
Go to the woods and the hills! No tears
Dim the sweet look that Nature wears.
—"Sunrise on the Hill."—Longfellow.
10. Nature is thought made visible.—Heinrich Heine.
11. Nature is the volume of which God is the author.—Harvey.
12. There is after all no house like God's out-of-doors.—R. L. Stevenson.
13. Flowers are the sweetest things that God ever made and forgot to
put a soul into.—Beecher.
14. A man does not plant a tree for himself, he plants it for posterity;
and sitting idly in the sunshine I think at times of the unborn
people who will to some extent be indebted to me. Remember me
kindly, ye future men and women.—Alexander Smith.
15. We all love to recall the time, when as children, we watched the
woodpecker, pecking on a tree to dig out the insect and grub
worms and tree parasites lodged therein!

16. The insects are the trees worst foes. The birds are their best friends.

From the Rhode Island Arbor Day Annual for 1908 we clip the following brevities:

17. Trees and Birds:—Trees and birds make our streets, our homes, and our cities more beautiful and pleasant, but they do more than that. They make all who look upon them, who care for them and love them happier and better. These days are set aside for the study of trees and the planting of them; for the study of birds and the protecting of them; but more particularly to arouse a finer sentiment towards them in the hearts and minds of the children. It is well to plant a tree in the ground, but it is better to implant the love of the tree in the child. A bird in the heart is worth two in the bush. But the tree must be in the ground and the bird in the bush, before either can live or grow in our appreciation.
18. The forest is the soil-former, a soil-improver, a soil-fixer, a flood-preventer, a conservator of moisture, a wind-break, a sanitary agent, and a beautifier of the earth.
19. "Think of it!" said Edward Everett Hale, "If for one hundred years the nation plants 250,000 acres by far the needful demand will be fully met. This means about 6,000 acres in each of forty states. The smaller states like Massachusetts and Rhode Island would have much less than that average. But Massachusetts holds 5,000,000 acres. Half this land is non-productive. It would be very easy for us to plant areas of 6,000 acres every year for a century. I hope we shall!"
20. Our Bird Patrol:—We may plant trees or carefully guard those already grown, but we cannot always protect them from their insect enemies. We may spray the fruit trees in garden or orchard, but who can protect the woodlands or check the insects in grain or hayfields? Who but the birds? Nature has decreed that the birds shall do this work and has banded them into squads to patrol the earth, trees, and sky."
21. The little chickadee alone will in one day hunt out and destroy 5,500 eggs of the destructive canker-worm moth. A few lumps of suet hung in the trees will keep a flock of chickadees in the neighborhood all winter. Farms where this bird is encouraged are remarkably free from canker-worms.
22. There is good reason to believe that if the birds had been allowed to increase steadily instead of being destroyed there would now be no need to spend so many thousands of dollars for insect poison.
23. Our native birds are well called a "vast army on wings, able to carry their flying squadrons hundreds and even thousands of miles where food abounds and insects threaten destruction to vegetation."

Unpaid Laborers.

24. From morning until night, almost the whole of his life, the bird is working for us. He does not know he is working for us, of course, he is simply hunting for his food. Besides destroying insects and small animals, the birds eat seeds of troublesome weeds that farmers and gardeners are all the time laboring to keep down. Some of the seed eaters prefer the seeds of the

The Wise Old Owl.

34.

"A wise old owl lived in an oak,
The more he saw the less he spoke.
The less he spoke, the more he heard;
Why can't we all be like that bird?"

—Selected.

Selections For Arbor Day.

We herein reprint the following selections taken from many sources for such use as the teacher and others in charge of Arbor Day program may see fit to make of them:

Springtime.

Air—"Auld Lang Syne."

The winter storms have passed away,
And springtime now is here
With sunshine smiling all around,
And heavens blue and clear.
The gifts of Nature brighten earth,
And Nature her garden gay;
They give a cheery greeting bright
On this, the Arbor Day.

The birds with gladsome voices sing,
Each its melodious lay,
And music swells each little throat
On this, the Arbor Day.
The trees put forth their greenest leaves
On this, the Arbor Day.
And welcome now the chosen tree
Which we shall plant to-day.

—Ellen Beauchamp.

My Neighbor.

I have a new neighbor just over the way,
She was moving in on the first of May;
When she took in her household goods, I saw
They were nothing but rubbish and sticks of straw.
But when I made her a call just now
I found she had furnished her house somehow
All trim and tidy and nice and neat,
The prettiest cottage in all the street.
Of thistledown was her carpet fine,
A thousand times better and softer than mine;
Her curtains, to shut out the heat and light,
Were woven of blossoms pink and white;
And the dainty roof of her tiny home
Was a broad green leaf like an emerald dome.
'Tis the cosiest nook that you ever did see,
Mrs. Yellowbird's house in the apple tree.

Youth's Companion.

We Love The Trees.

(Tune: There's Music in the Air.)
We love the grand old trees,
With the Oak, their royal king,
And the Maple, forest queen,
We to her our homage bring;
And the elm with stately form,
Long withstanding wind and storm,
Pine, low whispering to the breeze,
Oh, we love the grand old trees.

We love the grand old trees,
The cedar bright above the snow,
The poplar straight and tall,
And the willow weeping low,
Butternut and walnut, too,
Hickory so staunch and true,
Basswood blooming for the bees;
Oh, we love the grand old trees.

We love the grand old trees,
The tulip branching broad and high,
The beech with shining robe
And the birch so sweet and shy,
Aged chestnuts, fair to see,
Holly bright with Christmas glee,
Laurel crown for victories,
O, we love the grand old trees.
O, we love the grand old trees.
—Ada S. Sherwood, in Journal of Education.

Arbor Day March.

(Air: Marching Through Georgia.)
Celebrate the Arbor Day
With march and song and cheer,
For the season comes to us
But once in every year;
Should we not remember it
And make the mem'ry dear,
Memories sweet for Arbor Day?

CHORUS.

Hurrah! Hurrah! The Arbor Day is here;
Hurrah! Hurrah! It gladdens every year.
So we plant a young tree on blithesome Arbor Day,
While we are singing for gladness.

Flow'rs are blooming all around,
Are blooming on this day;
And the trees with verdure clad,
Welcome the month of May,
Making earth a garden fair
To hail the Arbor Day,
Clothing all nature with gladness.
Ellen Beauchamp.

My Country.

I love my country's pine-clad hills,
Her thousand bright and gushing rills,
Her sunshine and her storms;
Her rough and rugged rocks, that rear
Their hoary heads high in the air
In wild fantastic forms.

I love her rivers, deep and wide,
Those mighty streams that seaward glide
To seek the ocean's breast;
Her smiling fields, her pleasant vales,
Her shady dells, her flowery dales,
Her haunts of peaceful rest.

I love her forests, dark and lone,
For there the wild bird's merry tone
Is heard from morn till night,
And there are lovelier flowers, I ween,
Than ere in Eastern lands were seen,
In varied colors bright.

Her forests and her valleys fair,
Her flowers that scent the morning air,
Have all their charms for me;
But more I love my country's name,
Those words that echo deathless fame,
"The Land of Liberty."

—Hesperic.

Three Little Trees.

(Recitation for a tiny girl. Three other children stand near—as the trees—laughing, whispering, telling secrets, clapping hands, etc., in pretty pantomime.)

Way out in the orchard in sunshine and breeze,
A-laughing and whispering, grew three little trees.

And one was a plum tree, and one was a pear,
And one was a rosy-cheeked apple tree rare.

A dear little secret, as sweet as could be,
The breeze told, one day, to the glad apple tree.

She rustled her little green leaves all about,
And smiled at the plum, and the secret was out.

The plum told, in whispers, the pear by the gate,
And she told it to me, so you see, it came straight.

The breeze told the apple, the apple the plum,
The plum told the pear, "Robin Redbreast has come."

And out in the orchard they danced in the breeze,
And clapped their hands softly these three little trees.

—Journal of Western Canada.

Arbor Day Anthem.

(Tune: "America.")

Joy for the sturdy trees,
Fanned by each fragrant breeze,
Lovely they stand.
The song-birds o'er them thrill,
They shade each tinkling rill,
They crown each swelling hill,
Lowly or grand.

Plant them by stream or way,
Plant where the children play
And toilers rest;
In every verdant vale,
On every sunny swale,
Whether to grow or fail,
God knoweth best.

Select the strong, the fair,
Plant them with earnest care,
No toil is vain.
Plant in a fitter place,
Where like a lovely face,
Set in some sweeter grace,
Change may prove gain.

God will his blessing send—
All things on him depend.
His loving care
Clings to each leaf and flower
Like ivy to its tower,
His presence and his power
Are everywhere.

—Dr. S. F. Smith, Author of America.

What Do We Plant?

What do we plant when we plant the tree?
We plant the ship, which will cross the sea,
We plant the masts to carry the sails;
We plant the plank to withstand the gales,
The keel, the keelson, and beam and knee;
We plant the ship when we plant the tree.

What do we plant when we plant the tree?
We plant the houses for you and me;
We plant the rafters, the shingles, the floors;
We plant the studding, the lath, the doors,
The beams and siding, all parts that be;
We plant the house when we plant the tree.

What do we plant when we plant the tree?
A thousand things that we daily see.
We plant the spire that out-towers the crag;
We plant the staff for our country's flag;
We plant the shade from the hot sun free—
We plant all these when we plant the tree.

—Henry Abbey.

Recitation.

Do you know the trees by name
When you see them growing
In the fields or in the woods?
They are well worth knowing.

Watch them in the early spring,
When their buds are swelling;
Watch each tiny little leaf
Leave its little dwelling.

Watch them later, when their leaves
Everywhere are showing;
Soon you'll know the different trees
When you see them growing.

—Selected.

Spring.

"I hear the wild geese honking
From out the misty night—
A sound of moving armies
On-sweeping in their might;
The river ice is drifting
Beneath their northward flight.

I hear the bluebird plaintive
From out the morning sky,
Or see his wings a-twinkle
That with the azure vie;
No other bird more welcome,
No more prophetic cry.

I hear the sparrow's ditty
A near my study door;
A simple song of gladness
That winter days are o'er;
My heart is singing with him,
I love him more and more.

I hear the starling fluting
His liquid "O-ka-lee;"
I hear the downy drumming
His vernal reveille;
From out the maple orchard
The nuthatch calls to me.

O, spring is surely coming,
Her courtiers fill the air;
Each morn are new arrivals,
Each night her ways prepare;
I scent her fragrant garments.
Her foot is on the stair."

John Burroughs.

The Oak Tree.

Long ago in changeful autumn,
When the leaves were turning brown,
From a tall oak's topmost branches
Fell a little acorn down.

And it tumbled by the pathway,
And a chance foot trod it deep
In the ground, where all the winter
In its shell it lay asleep.

With the white snow lying over,
And the frost to hold it fast,
Till there came the mild spring weather,
When it burst its shell at last.

Many years kind Nature nursed it,
Summers hot and winters long;
Down the sun looked bright upon it,
While it grew up tall and strong.

Now it stands up like a giant,
Casting shadows broad and high,
With huge trunk and leafy branches
Spreading up into the sky.

Child, when haply you are resting,
'Neath the great oak's monster shade,
Think how little was the acorn
Whence that mighty tree was made.

Think how simple things and lowly
Have a part in nature's plan;
How the great have small beginnings,
And the child becomes a man.

Little efforts work great actions;
Lessons in our childhood taught
Mold the spirits to the temper
Whereby noblest deeds are wrought.

Cherish then the gifts of childhood,
Use them gently, guard them well;
For their future growth and greatness
Who can measure, who can tell?

—Colorado Arbor and Bird Day.

An Arbor Day Tree.

Dear little tree that we plant to-day
What will you be when we're old and gray?
"The savings bank of the squirrel and mouse
For robin and wren an apartment house,
The dressing-room of the butterfly's ball,
The locust's and katydid's concert hall,
The school-boy's ladder in pleasant June,
The school-girl's tent in the July noon.
And my leaves shall whisper them merrily,
A tale of the children who planted me."

—From The Intelligence.

Put Flowers in Your Window.

Put flowers in your window, friend,
And summer in your heart,
The greenness of their mimic boughs
Is of the woods a part;
The color of their tender bloom
Is love's own pleasing hue,
As surely as you smile on them,
They'll smile again on you.

Put flowers in your window, when
You sit in idle mood,
For wholesome, mental ailment,
There is no cheaper food.
For love and hope and charity
Are in their censer shrined,
And shapes of loveliest thought grow out
The flower-loving mind.

—Author Unknown.

We Thank Thee.

For flowers that bloom about our feet,
For tender grass so fresh and sweet;
For song of bird and hum of bee;
For all things fair we hear or see,
Father in Heaven, we thank Thee!

For blue of streams and blue of sky;
For pleasant shade of branches high;
For fragrant air and cooling breeze;
For beauty of the blooming trees,
Father in Heaven, we thank Thee!

—Author Unknown.

Willow and Alder.

See pretty pussy willow
In ermine mantle clad,
Is strolling by the river
To make the alders glad.
For all her yellow tresses
In sunlight gleam with gold;
The breezes gently toss them
In many a lustrous fold.

These are my several darlings—
This ever wedded pair,
My lad with silken raiment,
My lass with golden hair;
With merry words I greet them,
While bluebirds sing amain—
“The sweet south wind is blowing,
And spring has come again.”

—Michigan School Moderator.

Who Says Arbor Day?

Who says Arbor Day?
Oriole, bobolink, bluebird and bee,
Laughing Bob White in the tall elm tree,
Robin! Ah who is so happy as he?

All say—
“’Tis the glad Arbor Day.”

Who says Arbor Day?
Dark Eddy Brook, as it ripples away,
Winds, if we listen to hear what they say,
Tossing the adder tongues, yellow and gay.

They say—
“’Tis the glad Arbor Day.”

Who says Arbor Day?
We, as we roam through the green wood so sweet,
Pausing to speak with the wood folk we meet,
Emerald the mosses that grow at our feet.

We say—
“’Tis the glad Arbor Day.”

The Baby-Class Tree.

We little folks planted a wee, wee tree,
The tiniest tree of all;
Right here by the school house door it stands,
With two little leaves like baby’s hands,
So crumpled and soft and small.

And I really believe it is ever so glad
That we planted it there to grow,
And knows us and loves us and understands,
For it claps them just two little hands,
Whenever the west winds blow.

—Youth’s Companion.

Little By Little.

Little by little an acorn said
As it slowly sank in its mossy bed,
I am improving every day
Hidden deep in the earth away.

Little by little each day it grew,
Little by little it sipped the dew;
Downward it sent out a thread-like root,
Up in the air sprang a tiny shoot.

Day after day and year after year,
Little by little the leaves appear;
And the slender branches spread far and wide,
Till the mighty oak is the forest’s pride.

—Selected.

The Difficult Seed.

A little seed lay in the ground,
And soon began to sprout;
“Now which of all the flowers around,”
It mused, “shall I come out?”

“The lily’s face is fair and proud,
But just a trifle cold;
The rose, I think, is rather loud,
And then its fashion’s old.

“The violet is very well,
But not a flower I’d choose;
Nor yet the Canterbury bell —
I never cared for blues.

“Petunias are by far too bright,
And vulgar flowers besides;
The primrose only blooms at night,
And peonies spread too wide.”

And so it criticised each flower,
This supercilious seed;
Until it woke one summer hour,
And found itself a weed.

—St. Nicholas.

Why They Plant Trees.

“Did you hear the good news?” said the robin
To his mate in the tree.

“Did you hear what the children are doing
For you and for me?

Each dear little child with wide, innocent eyes
Is planning to give us a startling surprise.
By planting a tree that shall reach toward the skies,
And our homes in its branches shall be.”

“I’m sure,” said his mate, “‘tis a kind thing to do;
Do you really think such goods news can be true?”

“They are all planting trees in the meadow,”
A little girl said;

“They will grow till their beautiful branches
Spread far overhead.”

“Do you know why they plant them? It seems a
strange thing,

But whenever the robins are telling of spring,
We little girls each want a branch for a swing—
Back and forth as we swing under April skies blue,
We know they plant trees just for swinging, don’t you?”

But a dear little boy looked on with disdain,
And he said, “I’ll grow up and plant trees it is plain—
I’ll plant apples and peaches and cherries and plums,
So I’ll always have plenty to give to my chums;
But not for the world and all of its riches
Will you get me to plant any tree that grows switches.”

—Frances Frey.

This Is Arbor Day.

(Tune: Lightly Row.)

Arbor Day, Arbor Day,
See, the fields are fresh and green;
All is bright, cheerful sight,
 After winter's night.
Birds are flying in the air,
All we see is fresh and fair;
Bowers green, now are seen,
 Flowers peep between.

Swaying trees, swaying trees,
Rocking gently in the breeze,
Dressed so gay, fine array,
 For this is Arbor Day.
While we plant our tree so dear,
All the others list to hear
How we sing, in the spring,
 And our voices ring.

Here we stand, here we stand,
Round the tree, a royal band;
Music floats, cheering notes,
 Sweetly, gayly floats.
March along with heads so high
While our tree is standing nigh;
Step away, light and gay,
 On this Arbor Day.

—Selected.

The Tree's Dream.

Little green tree, so slim and small,
Standing under the school house wall,
Planted there upon Arbor Day,
Tell me, what are you doing, say?
So quiet you stand, and so still you keep,
I really believe you have gone to sleep.

"Oh, I'm dreaming now," said the little tree,
"Of the pleasant days that are to be,
Of the robins and bluebirds that every spring
Will come and sit in my boughs and sing.
Oh, plenty of company I shall see
In my gay green tent," said the little tree.

"I'm dreaming of all the little girls,
In gingham aprons and yellow curls,
That under the shade of my leafy boughs
Will make for themselves a wee play-house.
With nice burr-baskets, the dear little souls,
And pepper-pod teapots and sugar bowls.

"I'm dreaming of all the barefoot boys
That will fill my branches with merry noise,
And climb my limbs like an easy stair,
And shake down my nuts till the boughs are bare.
Oh, a jolly good comrad I shall be
When I grow up!" said the little tree.

— Elizabeth H. Thomas.

Lily March and Song.

(Tune: "Marching Through Georgia.")

Lilies of the meadow green and of the garden fair
Lilies with their fragrance sweet perfuming all the air,
Other flowers in loveliness can ne'er with them compare,
Pure white lilies of the meadow.

CHORUS.

Hurrah! Hurrah! we've found the lilies white,
Hurrah! Hurrah! the lilies sweet and bright;
So we'll sing the praises of the lilies here tonight.
Pure white lilies of the meadow.

How their petals glisten as they catch the morning light,
With the dew of heaven on them shining clear and bright,
They surely are to every one a very pleasing sight,
Pure white lilies of the meadow.

Solomon, in gorgeous robe, we're told, could not compare
With the lilies of the valley in their modest dress so fair;
Though toiling not nor spinning, yet God hath them in His care.
Pure white lilies of the meadow.

Emblems, too, of innocence and purity are they,
Like a "broken lily" hath a loved one passed away,
Fair to bloom forever in a land of perfect day,
In the blissful land of heaven.

Gather then the lilies sweet that in the meadows grow,
Lilies in their whiteness pure as newly-fallen snow.
Abundantly God giveth them, His love to us to show,
Pure white lilies of the meadow.

—Selected.

Daisies Everywhere.

(Tune: "Lightly Row.")

To and fro, to and fro,
Daisies bow and curtsy low,
Dance and play, swing and sway,
In the fields of May.
White and gold so fair to see,
Tripping, tripping, gay and free,
Dancing here, dancing there,
Daisies everywhere.

To and fro, to and fro,
Little winds a message blow,
Daisies dear as they hear
Spread it far and near,
Spring is here and all is well,
That's the secret daisies tell,
While the winds softly blow
Daisies whisper low.

—Selected.

I Love A Tree.

First Child—

I love a tree in spring,
When the first green leaves come out;
And the birds build their nests and carol
Their sweet songs round about.

Second Child—

I love a tree in summer,
When in the noontide heat,
The reapers lie in its shadow,
On the greensward, cool and sweet.

Third Child—

I love a tree in autumn,
When frost, the painter old,
Has touched with his brush its branches
And left them all crimson and gold.

Fourth Child—

I love a tree in winter,
Mid snow and ice and cloud,
Waving its long, bare branches
In the north wind, wailing loud.

All Together—

Let us plant a tree by the wayside,
Plant it with smiles and with tears,
A shade for some weary wanderer,
A hope for the coming years.

—Lucy M. Mooney.

Why We Plant the Tree.

First Pupil—

We plant the tree for the shade it gives;
For the shade of a leafy tree
On a summer's day when the hot sun shines,
Is pleasant for all to see.

Second Pupil—

We plant the tree for the dear bird's sakes,
For they can take their rest,
While the mate sings songs of love and cheer
To the mother on her nest.

Third Pupil—

We plant the tree to please the eye,
For who does not like to see,
Whether on hill or plain or dale,
The beauty of a tree?

Fourth Pupil—

We plant the tree for the wood to use
In winter to keep us warm,
And for hall and church and store and house,
To have shelter from the storm.

—Primary Education.

Tree Planting.

O happy trees that we plant today,
What great, good fortunes wait you!
For you will grow in sun and snow
Till fruit and flowers freight you.

Your winter covering of snow
Will dazzle with its splendor;
Your summer's garb with richest glow,
Will feast of beauty render.

In your cool shade will tired feet
Pause, weary, when 'tis summer;
And rest like this will be most sweet
To every tired comer.

—Selected.

Crown the Spade.

Crown the spade on Arbor Day,
Of every tool the king.
The spade digs up the little tree
We for our festal bring;
The spade makes ready for the place
The little tree must own
When it is from its brothers brought
And coaxed to dwell alone;
The spade then brings the richer soil
And spreads it all around,
And still with kindly services
It often seeks that ground;
Then, while we celebrate the trees
And all their virtues trace,
The spades in holiday attire
Our festival shall grace.

—Lettie Sterling.

The Uses of Trees.

What do you see in the lofty trees?
We see the ship that will cross the seas;
We see the masts to carry the sails;
We see the plank to weather the gales.

What do we plant when we plant the tree?
We plant the houses for you and me:
We plant rafters, shingles, the floor;
We plant the shade before the door.

A thousand things that we daily see
Are brought to us from the waving tree;
A thousand things on land and sea
Are planted by us when we plant the tree.

—Selected.

A Sensible Fir Tree.

Said a saucy little maple
To her cousin, Willow-tree :
"Miss Fir has no new mantle
This spring like you and me.

"She wears the same old garment
That she's worn since I was born;
I should think she'd feel so shabby
With no new bonnet on."

As she tossed her head and nodded
At the fir-tree's old-style clothes;
Willow laughed—she couldn't help it—
At the turned-up pea-green nose.

The fir tree, staid and modest,
Answered maple not a word,
Though I'm sure, yes, certain,
Everything was overheard.

She only softly murmured,
As she re-arranged her clothes:
"I'm glad my friends don't leave me
With every wind that blows."

—A. F. Caldwell

What the Trees Teach Us.

First Pupil—

I am taught by the oak
To be rugged and strong
In defense of the right;
In defiance of wrong.

Second Pupil—

I have learned from the maple,
That beauty, to win
The love of all hearts,
Must have sweetness within.

Third Pupil—

The beech with its branches
Widespreading and low,
Awakes in my heart
Hospitality's glow.

Fourth Pupil—

The pine tells of constancy,
In its sweet voice;
It whispers of hope,
Till sad mortals rejoice.

—Selected.

Birds Necessary For Successful Agriculture.

Increased acreage and larger crops mean a vast increase of insect life as the result of a more constant and abundant supply of food. Even now, despite the incessant warfare waged against them, insects are not diminishing in numbers. On the contrary, in many localities, they are increasing. Especially are new pests finding their way into the country, and as these usually are unaccompanied by the enemies which keep them in check at home, they frequently run riot in the new-found paradise. Well-known instances are the cotton boll weevil, and the gypsy and brown-tailed moths. It is estimated by entomologists that the annual loss of agricultural products from insect ravages in the United States is not less than \$500,000,000. To birds, then, we must look for allies in the continuous warfare against insect pests, and if they are to play even the same relative part in the future, as they have in the past, they should not only be protected, but determined efforts should be made to increase their numbers and make their work more effective.

What would happen were birds exterminated no one can foretell with absolute certainty, but it is more than likely—nay it is almost certain—that within a limited time not only would successful agriculture become impossible, but the destruction of the greater part of vegetation would follow. It is believed that a permanent reduction in the number of our birds, even if no species are actually exterminated, will, inevitably be followed by disastrous consequences.—National Geographic Magazine.

Bird Trades.

The swallow is a mason,
And underneath the eaves
He builds a nest and plasters it
With mud and hay and leaves.

The woodpecker is hard at work;
A carpenter is he;
And you may find him hammering
His house high up a tree.

The bullfinch knows and practices
The basket-maker's trade;
See what a cradle for his young
The little thing has made.

Of all the weavers that I know,
The oriole is the best:
High on the apple tree he weaves
A cozy little nest.

The goldfinch is a fuller;
A skillful workman he!
Of wool and threads he makes a nest
That you would like to see.

Some little birds are miners;
Some build upon the ground;
And busy little tailors, too,
Among the birds are found.

The cuckoo laughs to see them work;
"Not so," he says; "we do.
My wife and I take other's nests,
And live at ease—cuckoo!"

—Anna B. Thomas.

How Birds Care For Our Trees and Crops.

The following article taken from the Massachusetts 1906 Arbor Day Manual is so full of interest and so instructive that we have herein re-printed same from our last Arbor Day Manual:

Did you ever stop to think how much we owe to the birds for their care of our spreading shade trees, our fruitful orchards and our verdant woods?

The bird is just as necessary to the trees as the tree is to the bird. The tree furnishes the bird with nesting places, shelter and food. It bears buds, blossoms and seeds which birds eat, and also furnishes food for insects and other animals on which birds feed.

In return, the birds distribute the seed of the tree, that other trees may succeed it, and that its descendants may occupy more ground. They assist and regulate nature's pruning of the tree; they guard the tree against destruction, for they check the increase of many creatures that feed upon it.

Birds guard all parts of the tree from the too injurious attacks of its insect enemies. The young or larvae of beetles and cicades live in the ground, where they feed on roots. Birds which feed much on the ground scratch or dig up such larvae or grubs, or catch the beetles and cicades when they come out of the ground to fly about and mate. These insects form a favorite food for very many birds. Other insects which feed on the tree bury themselves in the ground to undergo their transformations;

others still hide among the dead leaves of the forest floor. Such insects are sought out by scratching birds, like the partridge, brown thrasher and chewink.

The trunks and limbs of trees are pierced by the larvae of boring beetles. These grubs cut channels or burrow in the wood. Other species known as bark beetles, tunnel between the bark and the wood.

The grubs of boring insects are dug out of their hiding places by woodpeckers. These birds are of great service, for a borer will sometimes kill a tree, and a single woodpecker often destroys many borers in a day. Insects that hide in the crevices of the bark are sought by prying chickadees, creepers and nuthatches. Insects that eat buds and leaves are hunted by warblers, vireos, thrushes, orioles, tanagers, cuckoos,—a host of birds that feed much among the foliage of trees. Insects that reach the flight stage and fly about among the tree tops are taken on the wing by warblers and flycatchers. Those that escape all these and test their new grown wings by longer flights, are chased by flycatchers; while those that reach the upper air are pursued by swallows, swifts or nighthawks.

When we realize that the unchecked increase of one species of insect might easily be sufficient in a few seasons to enable it to destroy most of the trees of the woods, and when we consider that the birds restrain the increase of hundreds of species of insects, then we can appreciate the value of birds as protectors of trees. It is now well understood that the birds and other natural enemies of insects ordinarily keep most tree pests so well in check that they do no great or serious injury to trees.

When it is stated on good authority that the people of the United States have suffered from the ravages of insect pests to the extent of about seven hundred million dollars in a single year, when the agriculture of the small State of Massachusetts is said to lose nearly five million dollars annually from the attacks of insects, it is time to look about us to see how we can get help in the war against them; it is time to do something to increase the numbers of the creatures that feed upon these insects.

One of the best possible ways to observe Arbor Day is by planting trees, shrubbery and vines that will produce food for birds to eat. Trees like the mountain ash, that retain their fruit in winter, are very attractive to birds. Such shrubs as the bar-

berry and sumach, and vines like the Virginia creeper and woodbine, also furnish fruits for birds in the late fall and winter.

Cone-bearing trees should be planted in groups, to protect the birds from the cold winds and storms. These evergreens and tangles of wild shrubs and vines along the fences and roadsides afford places of refuge to which the smaller birds can fly when pursued by their enemies.

Swallows, swifts, and phoebes can be encouraged by leaving barns, chimneys and sheds open, so that they may enter where they please.

Even if our feathered friends were of no practical value, they would still be indispensable to the world's best happiness. As little messengers of good cheer, as exponents of grace, song and living beauty, as examples of parental devotion, they help to brighten and uplift our lives. All that we can do to render their lives freer, safer and happier should be done as a duty,—as the willing payment of an obligation that we owe.

Woodpeckers.

Among our interesting birds none are more peculiar than Woodpeckers. The woodpeckers are insect-eating birds and most of them eat nothing else.

The small, black and white speckled woodpeckers (hairy woodpeckers and downy woodpeckers) that are seen on trees, mostly in winter, are in search of insect eggs which have been laid on limbs and bark the summer before. And occasionally when one chisels a hole in a tree it is to get a wood borer which the bird has located by hearing or smell.

The fact that these birds are insect-eaters and do not go south in winter, as most insect-eating birds do, makes it necessary for them to have remarkable means for procuring their food. The woodpecker's foot is not like the foot of any other bird; it is so shaped that this bird can light not only upon a limb as other birds do; but it can cling to the perpendicular or even the under surface of trees and limbs, and can hold on as securely head-down as head-up. It has tail feathers that are so stiff that it can sit on its tail, hold its feet, and chisel a hole into a tree for a wood-borer where a boy could not dig it out with a knife. Its bill has a chisel point and its neck has strong muscles, and it is

able to chisel its way into wood with a force that would addle the brains of any other kind of bird. Insects have a habit of hiding in cracks of wood and under bark. The woodpecker knows this and nature has given it an instrument for getting insects out of such places without the work of digging them out. This apparatus is its tongue as in other birds; but they continue back under its jaws, turn up the back of its head, and run forward to the base of its bill. In the flicker, or yellow-hammer, the tongue continues forward nearly to the end of the hollow upper bill. In the red-head the roots of the tongue coil around one of its eyes. When the bird thrusts its barbed tongue out to get an insect which it cannot reach with its bill the roots of the tongue slide back over the top of the head and the tongue is protruded three times as far as other birds can thrust their tongues out.

No one who is acquainted with a woodpecker would want to kill it. Whether climbing about the trees or pecking holes in them (except digging a hole in a dead tree in the spring for its nest) it is getting the very insects which injure the trees, and which we are glad to have killed. The woodpecker is a model in its ability to care for itself; it finds insects when other insect-eating birds would starve; it always has a clean bright coat in spite of its rough, hard work, and there isn't a lazy feather in its body.

It is a very easy matter to attract birds to our homes, even to our school yards. Pieces of suet fastened well up on the tree trunks make a feast for the woodpeckers, nuthatches and chickadees. Chopped suet and bits of fresh fat pork supplied regularly through the winter will ensure their daily presence in the neighborhood.

An observer writes as follows: If a piece of suet is fastened to a tree in winter, the Downy woodpecker is sure to search the dainty out, and will make daily visits to feed upon it. Under such circumstances as these he becomes very tame, and one may approach within a few feet of the tree upon which he is industriously feeding.

When a piece of suet that I tied to a limb was all eaten by the downy woodpecker that had been my first caller, he explored with great thoroughness a pile of cordwood that lay along the fence, and into which a number of small pieces of the coveted food had fallen. When one of these pieces was found he would

invariably carry it to the tree and eat it and then renew the search.

Both the downy and hairy woodpecker manage to endure our hard winters, excavating new homes for themselves in the fall and generously leaving their nests made in the previous spring for the accommodation of nuthatches and brown creepers.

The Downy woodpecker is a courageous defender of his home and is a valiant foe. One day in autumn I noticed a great commotion among thirty or forty English sparrows that seemed desirous of perching upon a half dead tree. A male Downy was vigorously fighting off the sparrows, darting at them viciously with excited clicking notes, and then seeking cover behind some limb. So rapidly and determinedly did the little warrior wage his contest that the whole flock was at length driven from the tree. Such valor was to me a new trait in Downy's character; and as I stood for a moment wondering at its cause, I saw fine chips falling from a hole in a dead limb. Downy's mate was evidently excavating their winter home while he bravely fought off the band of sparrows, who would have gladly preempted it."

How The Woodpecker Knows.

How does he know where to dig his hole,
The woodpecker there on the elm tree bole?
How does he know what kind of a limb
To use for a drum and to burrow in?
How does he find where the young grubs grow—
I'd like to know?

The woodpecker flew to a maple limb,
And drummed a tattoo that was fun for him,
"No breakfast here! It's too hard for that."
He said, as down on his tail he sat,
"Just listen to this: rrrr rat-tat-tat."

Away to the pear tree, out of sight,
With a cheery call and a jumping flight,
He hopped around till he found a stub,
"Ah, here's the place to look for a grub.
'Tis moist and dead—rrr rub-rub-dub-dub."

To a branch of the apple-tree Downy hied,
And hung by his toes to the under side,
" 'Twill be sunny here in this hollow trunk
'It's dry and soft, with a heart of punk,
Just the place for a nest—rrr-runk-tunk-tunk."

“I see,” said the boy. “Just a tap or two,
Then listen as any bright boy might do,
You can tell ripe melons, and garden stuff
In the very same way,—it’s easy enough.”

—William J. Long.

The Nuthatch.

The Nuthatch is the acknowledged acrobat of the woods—not that he acts for display it is all business with him. A tree is a complete gymnasium in itself, and this bird is master of it all. Topside, bottomside, inside, outside, this bird is there, fearless, confident; in fact, he rather prefers traveling head downward, especially on the main trunk route. He pries under bark scales and lichens, peers into crevices, and explores cavities in his search for tiny insects, larvae and insects’ eggs—especially the latter. The value of the service which this bird and his close associates perform for the horticulturist is simply incalculable. There should be as heavy a penalty imposed upon any one who wantonly kills a nuthatch or a chickadee as upon one who enters an enclosure and cuts down an orchard or shade tree.

The nest of the nuthatch is placed in a cavity carefully chiselled out, and usually at a great height in an elm tree or perhaps an oak. Both sexes share the labor of excavation, and when the cavity is somewhat deepened one bird removes the chips while the other delves. Like all the hole-nesting species of this family, but unlike the woodpeckers, the nuthatches provide for their home an abundant lining of moss, fur, feathers and the like. This precaution is justified from the fact that they are early nesters—complete sets of eggs being found no later than the second week in April.—The Birds of Ohio, Dawson, Wheaton Publishing Co. From Arbor Day Annual 1909.

Bob White—The Farmer’s Best Friend—Always Loyal and Faithful.

Although slightly changed by climate and environment, this species of the quail known as our common partridge, is practically the same bird that ranges over the hills of New England, through Virginia and the Carolinas, southward to the sunny shores of Florida, and also westward to South Dakota, Kansas, and Texas.

This quail has long been popular as an article of diet, and also for the beauty of his modest coat, or the softer covey-call which summons the flock to a common resting-place in the shades of evening.

It has taken science a long time to find out his great value. We now know that the Bob White is very seldom guilty of trespass, but that he is of constant value as a destroyer of weeds and injurious insects. From a careful examination of many hundreds of stomachs, it has been found that from early autumn until spring his food consists principally of vegetable matter, a portion of it being found by gleaning the fallen grain in fields where the harvest has been gathered; but aside from this the main food of the quail during the autumn and winter consists of the seeds of noxious and troublesome weeds, these seeds indeed, making up an average of one-half of his diet for the whole year.

Weeds—eighty-five different weeds have been found to contribute largely to the bird's diet and his marvelous appetite is his most valuable asset. Crops and stomachs have been found which were crowded with rag-weed seeds to the number of 1,000, while another had eaten as many seeds of crab grass. A bird shot in October 1902 at Pine Brook in New Jersey, had eaten 5,000 seeds of green ox-tail grass and one killed on Christmas Day of 1901 at Kinsale, Va., had taken about 10,000 pig-weed seeds.

When we consider that a single one of these might produce a plant bearing thousands of seeds in a single season, and this process, if un-checked, would in three years, produce not millions but billions of weeds, we may get some idea of the value of the quail as a weed destroyer—a work in which he is ably assisted by the mourning dove, the meadow lark and other allies.

Beside weed seeds and grain, he also eats more or less the seeds of pine and maple, acorns and beech nuts, as well as of various wild fruits in their season, including the berries of poison ivy.

The Chinch Bug—After a winter in which a vegetarian diet has largely predominated, Bob White has no desire for the sprouting grain, but in the early spring he is out on the war-path hunting for animal food. Although in most climates he can find more or less insect food during every month of the year, his bright eyes are always on the lookout for the earliest comers

among the insect pests and during the spring, summer and autumn his services in this direction are invaluable. The chinch bug leads the list of expensive insects with a tribute levied upon the American farmers which is estimated at \$100,000,000 per year. This destructive little pest invades the wheat fields in armies, but Bob-White leads his covey to the fray, and if he had warriors enough, he could eradicate the foe, for the bugs winter in just such situations as are frequented by the quail, and the birds feast upon them, whenever they are available.

The Grasshopper stands next in the amount of damage done and \$90,000,000 per year is a conservative estimate of his tax upon this country, for he sometimes devastates whole states. But here too, Bob-White is on duty with the meadow larks, all of them feeding voraciously upon the invader.

The Potato Bug is another enemy which has cost the American farmer a vast amount of trouble and expense. In spite of large expenditures for poisons, this beetle still costs us about \$8,000,000, per year. Very few birds will touch this disgusting creature but the rose breasted grossbeak and faithful Bob-White are always ready for them. The potato bug is not an occasional article of food, but when available is made a constant article of diet, one crop of a quail has been found to contain 100 of them, neither is this useful habit of protecting the potato vines confined to any one locality. Reports to the same effect have come to the Biological Survey from Ontario, New Jersey, Virginia, Maryland, Iowa, Nebraska, Kansas and Texas. In some cases of badly infested potato vines, Bob-Whites have been seen patrolling the rows, and carefully picking off the bugs.

The Mexican Cotton Boll Weevil came over from the border in 1894, and less than ten years later it was costing America \$15,000,000 per year and these figures soon rose to \$20,000,000. As yet it is mostly confined to Texas, but threatens to sweep over the entire cotton belt. Hence all the cotton states would do well to prohibit the shooting of a single quail until this foe is exterminated, for Bob-White is looking for him and feeding upon him.

Bob-White also destroys the striped cucumber beetle which makes such havoc with cucumbers, squashes, etc. In fact, he has to his credit a list of fifty-seven different beetles, twenty-seven varieties of bugs, nine species of grasshoppers, locusts, and their

kindred, and thirteen sorts of caterpillars, besides ants, flies, wasps, spiders, etc. The crops and gizzards examined in the government laboratories to ascertain the character and proportions of the quail's food, were collected from twenty-one states, besides Canada, District of Columbia and Mexico.

These birds are especially valuable during the nesting season, as the young feed almost entirely upon insects, twelve or more different species having been identified as the food of the downy chicks. In cold climates a sheaf or two of grain might be placed on a platform slightly raised above the snow, and thus afford them both food and shelter. Sumac trees and berries should be left for their benefit, and also the edge of grain in the wheat fields, for the farmer can well afford to feed his most valuable ally in his fight against weeds and insects.

If the total annual cost of the common schools of the United States is \$310,000,000, how does the cost of the schools compare with the cost of these four pests?

The total cost of schools in West Virginia is \$4,360,000. Draw a heavy line one-half inch long to represent this amount. On the same scale draw lines to represent what each insect, the Chinch Bug, the Grasshopper, the Potato Bug, and the Boll Weevil,—costs the United States annually.—Reprinted from Alabama Bird Day Book, 1909.

The Tragedies of the Nests.

The life of the birds is a series of adventures and of hair-breadth escapes by flood and field. A few of them probably die a natural death, or even live out half their appointed days. What perils beset their nests, even in the most favored localities! The cabins of the early settlers, when the country was swarming with hostile Indians, were not surrounded by such dangers. The tender households of the birds are not only exposed to hostile Indians in the shape of cats and collectors, but to numerous, murderous and bloodthirsty animals, against whom they have no defense but concealment. They lead the darkest kind of pioneer life, even in our gardens and orchards and under the walls of our houses. Not a day or a night passes, from the time the eggs are laid until the young are flown, when the chances are not greatly in favor of the nest being rifled and its contents devour-

ed,—by owls, skunks, minks and coons at night, and by crows, jays, squirrels, weasels, snakes and rats during the day. Infancy, we might say, is hedged about by many perils; but the infancy of birds is cradled and pillowed in peril.—John Burroughs from “Signs and Seasons.”

The Robin's Story.

(For Third and Fourth Reader Classes.)

One bright morning in early spring when the grass was just beginning to get green the school children ran out on the playground for recess and saw in the apple tree near by two big, jolly robins. The children were very glad for these were the first Robin Redbreasts they had seen that spring, so they clapped their hands and said, How-do-you-do, Mr. and Mrs. Robin, we are glad to see you. Won't you tell us about your trip?" The Robins laughed, and Mrs. Robin made Mr. Robin keep quiet while she told the children this story:

"Last fall when the sharp winds came and you girls and boys put on your shoes and boots and started to school, we got cold and lonesome. We lived here several weeks after school began, sometimes eating some fruit which was left on the trees and vines, and sometimes picking up small pieces of bread which we found about the school house. At last the cold wind made us chilly, the lack of food made us hungry, and the stones thrown by some school boys made us afraid, so away we flew to the South.

We flew over rivers, hills, and mountains, all the way to Tennessee where we found hundreds of other robins in a cedar grove. We met some of our relations—aunts, uncles, nieces, nephews and cousins—who told us that the grove was a fine place to live in as the cedar trees had red berries that were just as good as the cherries we found here last summer.

My, O, My, we had a lot of trouble down there! The people didn't think we were good for anything except for food and the fun they could get from trying to kill us. The men and boys came out to our home in the grove with guns and clubs and killed several hundred of our neighbors. Sometimes they came with torches at night and killed or captured some of our friends who were sleeping.

What do you think of a big boy who will try to kill a little bird while it is asleep? Do you think they should wake us up first and let us have a fair show? Or do you think they should have left us alone as we were there only for a visit? You know we are too small to make much meat. Although they pay only five cents a dozen for us, one town bought five hundred dollars worth of dead robins. Ask your teacher how many robins that would be. I must not tell any more of my troubles for my husband and I escaped and are thankful to get back to our friends.

We started North several weeks ago, but found it began to get too

cold for us, so we visited some friends over in Virginia. As soon as the warm days came again, we flew just as fast as we could and arrived last evening at five o'clock and had some worms for supper.

The supper makes me think of one more thing which I must say to you boys and girls. Some people near here say we eat too much fruit. Now let me tell you what our pie is made of. We use one big spoonful of worms, bugs, grasshoppers, beetles and other insects that destroy crops; one spoonful of little wild fruits, and a small bit of other fruit to make the bugs taste better.

Don't you think that is fair?

There, the bell is ringing, so good-bye."

—From West Virginia Arbor and Bird Manual, 1910.

The Spring Migration of Birds.

A wonderful thing is happening now. A winged army hundreds of miles long is moving north right over our heads. It travels under cover of night, so that, unless we listen for the calls of the regiments, or turn our telescopes to the moon and see them, as black specks crossing its bright face, or else go to a lighthouse tower and watch for them to come, to the light, we will know nothing about the advance of the main army.

But when we go early to the fields and woods, we get exciting hints of what is happening in the dark. Squads of feathered soldiers, not there the evening before, surprise us at every turn. Some of them are stopping only for the day to get food and rest to enable them to go on their journey again at night; but some of them have come to stay, for they have got back to their old homes where they built their nests last year.

It is so exciting to feel the country all filling up again with life and song, so good to see our old friends back, and to discover new ones with them, that we want to ask each bird a hundred questions. Where did this army start from? How did the leaders know the way home? How did they travel the thousands of miles they had to? It makes us want to know everything there is to know about this wonderful movement of the birds, called migration.

A great many of the birds are coming back from Central America some as far as from southern Brazil in South America. The question is, how do they travel so far without getting lost? There are no railroads or steamship lines for them, but they have roads that serve them just as well. Some of them follow the coast-lines north, and others keep near to the great ranges of mountains and river valleys that run generally northward and southward.

They fly so high—from one to three miles above the earth—that they can see as well as we could from a balloon or a mountain top; better than we could for their eyes are sharper than ours. They can see probably a hundred miles all about. Then the old birds lead the way for the young to follow, and as the army probably straggles along for hundreds of miles,

the birds are always within hearing of each other, so they are not very likely to get lost.

From the 1st to the 20th of May most of the birds come back to the Middle Eastern States, and you will need to go out every day and keep a sharp lookout not to miss any of them. Be sure to keep lists telling when each bird is first seen, when next seen, when it becomes common, and when it is last seen, if it nests farther north. If it nests in your neighborhood, tell when it begins nesting, when it begins brooding, when the eggs hatch, and when the young leave the nest. You can get regular "migration" blanks from the Biological Survey, Department of Agriculture, Washington.

Your lists will grow more valuable every year for comparison, for unless the weather prevents, the birds come back on almost the same days of the month. Last spring a bird man in Washington, after looking at his lists, said to his wife, "The housewren that built here last year is due to-morrow." The next morning, sure enough, there their little friend was, climbing around, looking into all the nesting-boxes of the year before!—Florence Merriam Bailey; from St. Nicholas. Taken from West Virginia 1910 Arbor and Bird Day Manual.

The Birds—The Farmers' Best Allies.

Give Them a Square Deal.

Let me call your attention to the fact that children are the worst enemies song and insect destroying birds have. Men do not slaughter these valuable friends of the farmers, but boys, thoughtlessly and recklessly, slay the sweet songsters of the trees, more to show their marksmanship with a rifle or gun than for the purpose of killing them. I am sure that if our boys knew that these bright colored song birds destroyed each year millions of tons of weed seeds, which, if left to grow, would retard the farmers in making their crops, and if we all knew that the birds are constantly devouring insects that prey on growing vegetation, very much to its damage, every hand raised against the warblers would be forever stayed.

Suppose that all the school boys in the United States should for one day try to kill all the birds they could, the slaughter of these harmless creatures would be tremendous; millions would be destroyed. Nature having placed birds in the world to hold a check on the onslaught of harmful insects and of injurious weed seeds, the very laws that were originally designed to control the universe would be thrown out of joint, in the event that all of the birds were killed. It would be a very sad day indeed not only for our farmer friends, but for people everywhere if the bugs and worms should fall upon the crops and destroy them. If such should be the case, we not only would be deprived of grain from which to make our bread but would likewise be driven to the necessity of doing without clothing that is made from cotton.

It is easy to see therefore that the terrible state of want and discord,

which would prevail, would drive our people to desperation. Each one of us can contribute something towards preventing the possibility of such a state of existence by refraining from killing the birds, which after all are harmless creatures, and are likewise our farmers' best friends. Give the birds a chance to live. Give them here and everywhere a fair square deal.

As a result of scientific research of the most extended nature it has been ascertained that the cause of the prevalence of many maladies, and the problem of weed control is largely attributed to the slaughter of our insectivorous birds, which in the past have been wantonly murdered by the millions. Birds annually destroy thousands of tons of noxious weed seeds and billions of harmful insects; they were designed to hold in check certain forces that are antagonistic to the vegetable kingdom. The Mexican boll weevil which has made such desperate ravages on the cotton fields of Texas, is steadily marching into Alabama, and it has been ascertained that birds are its deadliest enemies. A noted French scientist has asserted that without birds to check the ravages of insects, human life would vanish from this planet in the short space of nine years; he insists that insects would first destroy the growing cereals, next would fall upon the grass, and upon the foliage, which would leave nothing upon which the cattle could subsist.

Even granting that only a portion of what the eminent Frenchman asserts is true, it is easy to glean from his theory that birds are man's best allies, and should be protected not only on account of their innocence, bright plumage and inspiring songs, but because they render to the farmer valuable assistance every day.

The wholesale slaughter of our song and insectivorous birds, which was so persistently waged in the past, has been practically stopped; even in the cities where the birds were curiosities, they are now seen in large numbers by the inhabitants who delight to hear once more the clear, sweet notes of the thrilling songsters of the forests.—Reprinted from Alabama Bird Day Book, 1909.

Against Tradition.

Our attitude toward the bird is against our American traditions, our national spirit, and our boasted ideas of liberty. North, South, East, West, our gates swing wide—too wide—to whomsoever will enter. Here the stranger is admitted to full familyship his rights protected, his children educated, and the harvests of our fields are his to share. Yet against our upright little "Citizen Bird," our neighbor and benefactor, an ornament and delight to our world, we are waging a crusade more unnatural and unjust than any the world has known since the days of Herod; and the "gentler sex" is waging it!

In all ages until now the birds have been loved and protected. The ancients revered them. Fable and song have immortalized them, little children regard them with ecstasy, and in all the world I have never heard of a person who did not love the birds. They enrich the imagery of the book of books, and we have chosen a bird as the symbol of strength and liberty of our country. Upon our coins of silver and gold the eagle, whom the ancients named "the Bird of Joy," the monarch of the empyrean air, sits in proud power, and has come to be for us the "Bird of Freedom."

Yet even the quills of this majestic bird, whose symbolism should set it apart from the common or profane associations of every American woman, is degraded to the frivolous uses of a shopping hat, jauntily thrust through the ribbon band, stripped of its fine distinction—a graceless figure.

In Cornwall there is an old superstition that to hurt or kill a robin or wren brought retribution in the shape of a friend's death.

Is it not questionable, apart from prejudice or sentiment, whether dead birds do really adorn; whether it is really becoming to any woman "to wear like the savage the scalps of the slain?"

We are not usually enamoured at the suggestion of death; and this stark little corpse of a bird out of which the beauty has been twisted, the staring bead eyes, the ruffled plumage, the poor little beak that will never again part in rapturous song; the wonderful wings we have robbed of their matchless grace of flight—are these lovely?

"We that never can make it
Yet dare to unmake it,
Dare take it and break it and throw it away."

And still the massacre goes on!—By Mrs. Mary Smith Riley.
Extract from Alabama Bird Day Book of 1909.

Don't Kill The Birds.

Don't kill the birds, the pretty birds
That sing about your door,
Soon as the joyous Spring has come,
And chilling storm are o'er.
The little birds, how sweet they sing!
Oh! let them joyous live;
And never seek to take the life
That you can never give.

Don't kill the birds, the pretty birds,
That play among the trees;
'Twould make the earth a cheerless place,
Should we dispense with these.
The little birds, how fond they play!
Do not disturb their sport;
But let them warble forth their song,
Till Winter cuts them short.

Don't kill the birds, the happy birds,
That bless the fields and grove;
So innocent to look upon,
They claim our warmest love.
The happy birds, the tuneful birds,
How pleasant 'tis to see!
No spot can be a cheerless place,
Where'er their presence be.

—Colesworthy; from Alabama Bird Day Book, 1910.

Suggestive Program.

1. Song—Spring Time.
2. Reading of the Governor's Proclamation.
3. Reading of the letter of the Superintendent of Public Instruction to the school children of Montana.
4. Reading of selections from Memory Gems, Nuggets, and Chips.
5. Reading—Historic Trees.
6. Song—Arbor Day March.
7. Essay—A Familiar Historic Tree.
8. Recitation—My Neighbor.
9. Recitation—What Do We Plant?
10. Song—Arbor Day.
11. Reading of selections from Arbor Day Brevities.
12. Reading—Bob White, The Farmer's Friend.
13. Reading—Tragedies of the Nest.
14. Reading—Some Interesting Facts About Trees.
15. Lily March and Song.
16. Address suited to the occasion by some school official or visitor.
17. Conclusion:—Arbor Day Anthem.

Note: This program being suggestive only, may be varied and changed in any way to suit the occasion.

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